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[*Authors alone are responsible for the contents of their respective Papers.*]

## THE ROUTES OF SUBMARINE CABLES.

By Lieutenant CARLYON W. BELLAIRS, R.N.

Monday, 28th May, 1900.

Sir JOHN COLOMB, K.C.M.G., M.P., late Captain R.M.A.,  
in the Chair.

THERE are two ways in which this subject of the routes of submarine cables can be dealt with. The first is to follow the orthodox method—marshalling the facts in an academic way, so as to lead up to the general principles on which cables are laid. On the other hand, we can take a test case like the proposed All-British Pacific cable to serve as the shuttlecock of our arguments. I propose to adopt the latter method—making the issue one of All-British *versus* British-owned cables. The one policy is to connect the different parts of the British Empire by cables landing only on British soil; the other is to employ British capital in laying cables wherever they can be profitably worked. The one appeals to sentimental, the other to business instincts. The business method has given us the same supremacy in submarine cables as we enjoy in shipping; the supremacy in each case having been won by leaving cables and shipping unfettered in following their natural growth. We cannot gauge how much harm can be done by the insecurity felt when Governments threaten to interfere with this natural growth; but it is self-evident that if foreign territory must be avoided, projects like the cable from Cornwall to Madeira and St. Vincent must be abandoned. It is not too much to say that the future of British submarine cables hinges on the form in which the Pacific cable question is solved.

Four conferences have reported on the Pacific cable scheme. The first one was the Imperial Conference at Ottawa, which met and dissolved under the spell of that word "Imperial"; and was responsible for the All-British cable policy, though no one can pretend that the principles governing the routes of submarine cables were discussed in an adequate manner. The Wellington Conference of 1894 recommended an All-British cable at the same time as it passed a resolution in favour of the

route *via* Hawaii, which was then as it is now—foreign territory. It looks very much as if the delegates, having delivered themselves of orthodox sentiments, paraphrased that famous divine Mr. Rogers, by saying “Hang sentiment; let’s get to business.” In the same way the Sydney Conference contented itself with blessing the All-British cable without any discussion, and then proceeded to talk about humdrum matters like compensation and *L s. d.*

There remains the Pacific Cable Committee of 1896 and 1897.

The Committee was called upon to decide if a Pacific cable could be laid, and, if so, “what route should be selected for the cable.” Having decided that the cable could be laid and worked, the Committee evaded its responsibility for selecting the route on the ground that the one *via* Hawaii “would involve a departure from the principle of using only British territory for landing stations, and as this principle has been formally endorsed by the Canadian and Australian Governments at the conferences at Ottawa and Sydney, the Committee consider that it should be adhered to, and that a departure from it would be a material change in the character of the scheme which was approved at those conferences.” It would be difficult to match such an unbusinesslike answer to the question “What route should be selected for the cable?” Indeed, the Committee appeared later to realise the absurdity of the grounds on which they had based their decision, for in paragraph 76 of their report we read:—“The committee has only to add that it would in their opinion be necessary to lay a duplicate cable, and that, if a deviation from an All-British route were permissible in the case of a duplicate cable, and if the circumstances of the time permitted of it, such a cable might advantageously follow a somewhat different route, *via* Honolulu.” The necessity for duplication is emphasised, and we are told that the route *via* Hawaii would result in “a very material reduction in the charges for interest and sinking fund, as the capital required would be less.”

From a business point of view, then, the Committee acknowledge that the Hawaii route is the right one. We may assume that they do not think, other conditions being equal, that the All-British cable could compete with cables costing less—such as the Eastern cable about to be laid to Australia *via* the Cape, or a cable from Hawaii to New Caledonia joining in with the projected American cable from San Francisco to Honolulu and the Far East.<sup>1</sup> It was pointed out by the Colonial Office—November 15th, 1892—in a letter replying to the unanimous resolution of the Chambers of Commerce, that the “primary difficulty in the matter is that if the proposed cable were laid along any of the routes most

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<sup>1</sup> The existing cable from Australia to New Caledonia was laid by the “Société Française des Télégraphes Sousmarins,” of Paris, under an agreement with the Governments of New South Wales and Queensland, that it was to be the first section of a Pacific cable to North America. The Marquess of Ripon, Secretary of State for the Colonies, wrote deprecating the agreement, on the ground that it diminished the chances of an All-British cable, and “they [the Imperial Government] cannot, from an Imperial point of view, regard with approval an arrangement under which such cable would touch foreign territory.”

advantageous from the commercial point of view, it would be subject to the disadvantage, specially deprecated by your Association, of passing through foreign territory." It seems as if this "disadvantage" must be very obvious, as we find the Canadian Government abandoning its original proposal for a cable *via* Hawaii, and the Chambers of Commerce and three influential committees sacrificing the commercial routes without calling for the evidence of naval officers, except Admiral Wharton—whose opinion was hostile to the All-British cable. Yet, so far from finding it a disadvantage to land the cable on territory belonging to a strong neutral Power like the United States, it seems to me a positive gain. In any case, we shall have to send our messages through the Commercial Cable Company's Atlantic cables,<sup>1</sup> and that is an American Company, and, to be consistent, fresh land lines will have to be constructed, as for 270 miles the C.P. Railway runs through the State of Maine. If, on the other hand, we are at war with the United States, the long C.P.R. telegraph along the railway can be interrupted at many points; and, in addition the All-British cable must pass within a few hundred miles of the United States base at Honolulu. Such a war is, however, highly improbable. What is not improbable, but self-evident, is that the All-British route entails certain grave disadvantages as compared with the route *via* Hawaii.

Before summarising these disadvantages, there is one point on which we must be quite clear. The Ottawa Conference recommended telegraphic communication "free from foreign control." What does foreign control amount to? In the American-Spanish War the American Government took possession of the American end of the cable going to its opponent's territory of Cuba. That is one instance of the way foreign control can be exercised. Again, a belligerent may insist on every message being in plain language, or it might, for a period during a war, suspend all communications. It is worthy of note, however, that a non-belligerent has never exercised this power, and there is no conceivable reason why it should do so. The matter is governed by usage, warlike messages being free to pass over neutral territory. The Submarine Cable Convention (Paris, 14th March, 1884) contains no provision for the neutrality of cables, and our representatives, as at the Peace Conference, have always been instructed to refuse to agree to the neutrality of cables. This non-recognition of neutrality extends to repairing-ships employed in the enemy's territorial waters. Thus, in the American-Spanish War the Americans warned the repairing-ship "Grappler" that any attempt to repair the cables would be considered an act of hostility and involve her seizure.

<sup>1</sup> The situation is somewhat farcical. We can employ British *submarine* cables and All-British territory, if we use the American-owned wires along the Inter-Colonial Railway which dovetail in with the C.P. Railway. On the other hand, the C.P. Railway has exclusive working agreements with the Commercial Cable Company by which one hands its traffic over to the other to the exclusion of all other companies, and, as I have said, the Commercial Cable Company is an American Company, though I believe Lord Selborne, the Under Secretary of State for the Colonies, and Chairman of the Pacific Cable Committee of 1896-7, is one of the Directors.

We can now pass on to the direct consideration of the All-British Pacific cable, and to enable us to do so let me run over the route and the length of spans of cable required—allowing the minimum of 10 per cent. for slack cable :—

	Knots.
Vancouver to Fanning Island - - - - -	3,561
Fanning Island to Fiji - - - - -	2,093
Fiji to Norfolk Island - - - - -	961
Norfolk Island to New Zealand - - - - -	537
Norfolk Island to Queensland - - - - -	834
Total - - - - -	7,986

At the same allowance of 10 per cent. for slack, a cable from Vancouver to Hawaii would be laid in a span of 2,596 knots, or 965 knots less than from Vancouver to Fanning Island. If you turn to your table of *data* you will find that at least 15 per cent. extra is taken for slack in the cable ship, as 10 per cent. slack in laying is often exceeded. Now, it is unlikely with the great depths and volcanic beds of the Pacific that direct routes can be followed. These considerations, and especially the length of the Vancouver to Fanning span, probably decided the Eastern Telegraph Companies to take the position they did, in 1897, before the Pacific Cable Committee—as evidenced in the following question and answer :—

*Question (1895):* “Should it be desired to lay this cable for Imperial reasons, would your Company be prepared to work and maintain it for an agreed annual sum ?”

*The Marquess of Tweeddale:* “Not a line from Vancouver to Fanning Island. The risks are so great that the Company could not undertake that on any terms.”

In 1899 we find, from the Blue Book containing “Further Correspondence on the Pacific Cable,” that the Eastern Companies renewed this offer to lay a cable *via* Hawaii, and the proposal was refused. We have to remember that the experience of the Eastern Companies in laying and operating cables in all oceans is unrivalled. Indeed, if as their opponents say, they constitute a monopoly, it is pertinent to ask where else then can you go for your expert testimony as to cables in tropical oceans and over volcanic beds? We are told we must have an All-British Pacific cable, and it has to be a Government work, because private companies will not undertake it. “Its importance,” write the Canadian High Commissioner and four Australian Agents-General, “its importance from a strategical point of view is manifest.” (Letter, 9th May, 1899.) They add that “the possession of the first cable across the Pacific appears to be a matter of the highest commercial importance.” This we all see, but they ought also to see that it is precisely their insistence on an All-British route that has so far defeated a British-owned Pacific cable and caused them to mournfully confess that there seems “no probability that private capital will be forthcoming for the purpose of laying a Pacific cable without a larger subsidy than the Governments interested in the project would be prepared to grant.” In spite, however, of all that has been written, it

cannot be said that the question has been finally decided. The terms of reference to the Committee which was appointed in November of last year give a loophole for a return to the policy of British-owned cables. It is invited to consider among other things "the steps which should be taken in order to secure that all messages between this country and Australia should be sent solely through British territory or through cables owned and worked by British companies." The significance lies in the little word "or" making the question as I have stated it, one of British owned *versus* All-British cables. I will now summarise the principal objections to the proposed All-British Pacific cable scheme from which I conclude that, following as it does an artificial route, it suffers from both strategical and commercial disadvantages.

1. By international law, as the cable does not touch neutral territory, a belligerent is at liberty to cut it anywhere along the route of 8,000 miles. The landing stations not being on neutral territory will have to be protected. It is a fact that the bearing of international law on the cable question was not gone into by any of the conferences and committees I have referred to.

2. It entails a span officially given as 3,560 knots, or the longest—by over 350 knots—in the world.<sup>1</sup> The result is :—

- a. Increase of weight, making repairs very difficult to carry out.
- b. Reduction in speed of working to twelve words, or sixty letters a minute.
- c. Increase in cost of sending messages.

3. Loss to Canada, Australasia, and our shipping trade of direct communication to Hawaii-Honolulu, being the only port of any significance along the route. The Secretary of Lloyd's pressed strongly before the Committee of 1896 for a cable to Honolulu. "The principal thing," he said, "the public take an interest in, apart from underwriters, is the safety of ships." He added that the shipping trade are using the telegraph "enormously as compared with formerly."<sup>2</sup>

4. The Americans are about to lay a cable from San Francisco to Hawaii. If we do not connect Australasia to this system, others will probably connect New Caledonia. Australasia would obtain at Hawaii a fresh line to the East by the projected American cables to the Philippines.

5. It is an advantage to Australasia to have direct communication to the United States *via* Hawaii. Mr. Lamb, of the Post Office, told the Committee in 1897 that Australasia sent nearly twenty times as many telegrams to the United States as to Canada. The traffic between

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<sup>1</sup> As I have stated, this span is very likely to be longer as the result of surveys. The longest existing cable, from Brest to Cape Cod, is heavily subsidised, but its success is doubtful. The Commercial Cable Company run one of their cables direct across the banks of Newfoundland in order to shorten the span, and this cable is able to take one-third more business than the longer spans.

<sup>2</sup> In 1898, no less than 570,000 tons of shipping entered, and the amount of tonnage is rising year by year. In 1896, when the above evidence was tendered the shipping entered was 122,000 tons less than in 1898.

Canada and Australasia was stated to be only 5,460 words per annum, or twelve words a day.

In my first objection that an All-British cable is exposed to cutting along the whole route, we are at once brought to the international law on the subject. One reads a great deal of loose talk about cutting neutral cables if they are of use to the enemy. It would be salutary if men holding official positions were called to account in all countries if they use language to the effect that acts are permissible in war which are contrary to international usage. Submarine cables have now been in operation since 1851, and deep-sea cables for over thirty years. During the last half century nearly every maritime Power has been at war, and yet there has not been a single authorised case of cable-cutting to contradict the belief that cables going from a belligerent's territory to that of a neutral can only be cut in the belligerent's territorial waters.<sup>1</sup>

Let me here quote a Reuter's telegram during the Spanish-American War :—

"The complete isolation of General Blanco is now regarded by the leading military and naval authorities here as essential, and they urge that it should be effected as quickly as possible, as General Blanco is known to be in constant communication with Admiral Cervera and with Madrid. It is proposed, therefore, to close without delay the three remaining cable exits from Santiago de Cuba to Jamaica and Hayti, whence there is a choice of six routes to Spain. Little danger, it is thought, will attend the cutting of these cables, and no doubt is entertained as to the right of the United States to cut them, although most of them belong to British companies. General Greely, the Chief Signal Officer, advanced the principle that the right existed to destroy cables in waters within Spain's jurisdiction. This principle has been accepted, and the Government are acting upon it."—*Times*, 19th May, 1898.

We have also the high authority of Professor Holland for the view that cables connecting a belligerent to neutral territory, cannot be cut outside the enemy's territorial waters.<sup>2</sup>

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<sup>1</sup> I say authorised, because the "St. Louis" cut a French cable outside territorial waters on 20th May, 1898, after failing to cut it within the three-mile limit from Cuba. The captain of the "St. Louis" acted without authority and the cable was repaired. Isolated incidents like this may be repeated and are best guarded against by the policy of multiplying the number of routes. All I contend is that only a strong maritime nation can afford to take such a liberty as to systematically attempt to cut cables going to a neutral territory; and in the case of an Anglo-American cable going from Canada to Australia *via* Hawaii and jointly owned by the British and American Governments, no nation would dare attempt to cut it unless at war with both countries.

<sup>2</sup> "The cutting elsewhere than in the enemy's waters of a cable connecting an enemy with neutral territory receives no countenance from international law. Still less permissible would be the cutting of a cable connecting two neutral ports, although messages may pass through it which, by previous and subsequent stages of transmission may be useful to the enemy." (Professor Holland's letters to the *Times*, 24th May, 1898.) It is only fair to add that Mr. Macdonald in his lectures in May and June, 1898, in this Institution, took the view that "precedents were of little use in solving the difficulties."

According to this view, a cable going from Vancouver to Hawaii has only to be protected at the parts which lie within three miles of the Canadian shore. I do not say that the danger of cable-cutting to a predominant naval Power is nearly so great as the late Sir Samuel Baker and others have asserted. I merely express the view that the risk to an All-British cable is greater than to one following a natural route to friendly neutral territory. The natural route is always the one cheapest to lay and maintain while opening up the largest market for commerce. This is the true commercial view. To my mind it is also the highest Imperial view. We are reaching a period of acute industrial conflict among the nations. At the same time we find increasing difficulty in extracting from British industry its payment for the burden of the naval armaments we require to avert war. Our ability to maintain these armaments depends on the skill with which the captains of industry wage the industrial war. They attain success by contenting themselves with a narrow margin of profit. They are aided by being first in the field through the use of the telegraph. There is thus a tendency for every commercial transaction to be preceded by a cable communication.<sup>1</sup>

Working with small profits, it is folly to make this cabling expensive when it might be cheap, to make it slow or a working speed of twelve words a minute when it might be fast, or twenty-three words a minute,<sup>2</sup> to lay it so as to tempt rivals into the field, and to go in another direction to that in which the shipping goes. Under these circumstances it is difficult to understand the position of M.P.'s and Chambers of Commerce complaining of the cable rates, if at the same time they support the All-British Pacific cable. This cable is so expensive that its supporters in the Press have the effrontery to say that Australia cannot have the All-British cable *via* the Cape to Australia as offered at, ultimately, 2s. 6d. a word, because the proposed Pacific cable could not compete with it. We are here in some vicious circle of argument, which I recommend to the friendly attention of Sir Edward Sassoon.<sup>3</sup>

<sup>1</sup> The Managing Director of the Commercial Bank of Sydney said, in 1896, before the Pacific Cable Committee:—"The merchants in Australia depend entirely now on the cable for their remittances. That tendency is increasing day by day. The cable is replacing bills of exchange."

<sup>2</sup> I give this subject to correction. Forty-five words a minute have been reached on one of the Anglo-American Company's cables. The manager informs me that the average working speed of this cable is thirty-three words a minute, and that its length is 2,164 knots. This compares with a length of 2,596 knots from Vancouver to Hawaii. Assuming the same sized cable and proportionate working speed, I find this gives an ordinary speed of over twenty-three words a minute by the Vancouver-Hawaii route, and 12·19 words a minute by the All-British cable to Fanning Island.

<sup>3</sup> The subject of cheap rates is one which Sir Edward Sassoon has made peculiarly his own in and out of Parliament. It is outside the scope of my paper, except to point out its general bearings on the routes of cables, and to draw attention to the fact that as the uncivilised areas of the world are brought under the domain of law and order, land telegraphs which are much cheaper to lay and maintain will increase. Sir Edward Sassoon has himself indicated several gaps in land routes which he considers might with great advantage be filled in. (*Vide* Address before Liverpool Chamber of Commerce, 11th December, 1899, and Inaugural Address as President of the Folkestone Chamber of Commerce, 7th November, 1899.)

Let no one hereafter make the Navy responsible for the scheme. Cables are of very great utility to us, but it has never been the practice of fleets to dangle at their ends. To do so is to sacrifice the great advantage a fleet derives from shrouding its movements. In this manner four wretched Spanish cruisers, at over a thousand miles distance, brought to a standstill the whole of the military movements of the United States on the Atlantic. Where the objective is certain and a base has to be prepared, strategical cables can be laid to suit the emergency. Thus the cable followed the fleet, in 1878, to Besika, Gallipoli, and Constantinople. So again when we cried "Hands off Korea," and seized Port Hamilton, a cable was laid to that place.<sup>1</sup> No political foresight can say when and where such special cables will be required. It cannot be too carefully considered by us all, and I would reiterate the figure again and again, if it would add to the impression on your minds, that with the limited supplies of gutta percha the existing companies can only be relied on for a supply of about 18,000 knots of cable per annum. Will you bear that figure in mind when we come later to the suggestion for subsidies to companies maintaining reserves of cable? In the meantime, we can pass on to the other governing facts of the situation. We know that cables can be laid at the rate of six to eight knots per hour, so that if the resources exist and the routes have been surveyed, the cables can be readily laid, allowing, of course, for time required to place the cable on board, and for the ship to proceed to her starting-point. In this manner a cable originally intended for Australia was used during the Zulu War to bring Durban into the telegraphic system. Subsidies are given for keeping coal at selected spots, and subsidies might be given for storing cables and resources.<sup>2</sup> The Intelligence Departments can consider what routes may be required in war, and the Admiralty can arrange for their survey. For the rest, the naval requirements may be said to be the same as those of commerce, viz., a multiplicity of routes, so that if the cable is lost in one direction, the message can be sent in another.<sup>3</sup>

I desire now to draw your attention to the diagram illustrating the communications to Malta, which shows the result of this policy admirably carried out. Again, in providing us with alternative routes to the East,

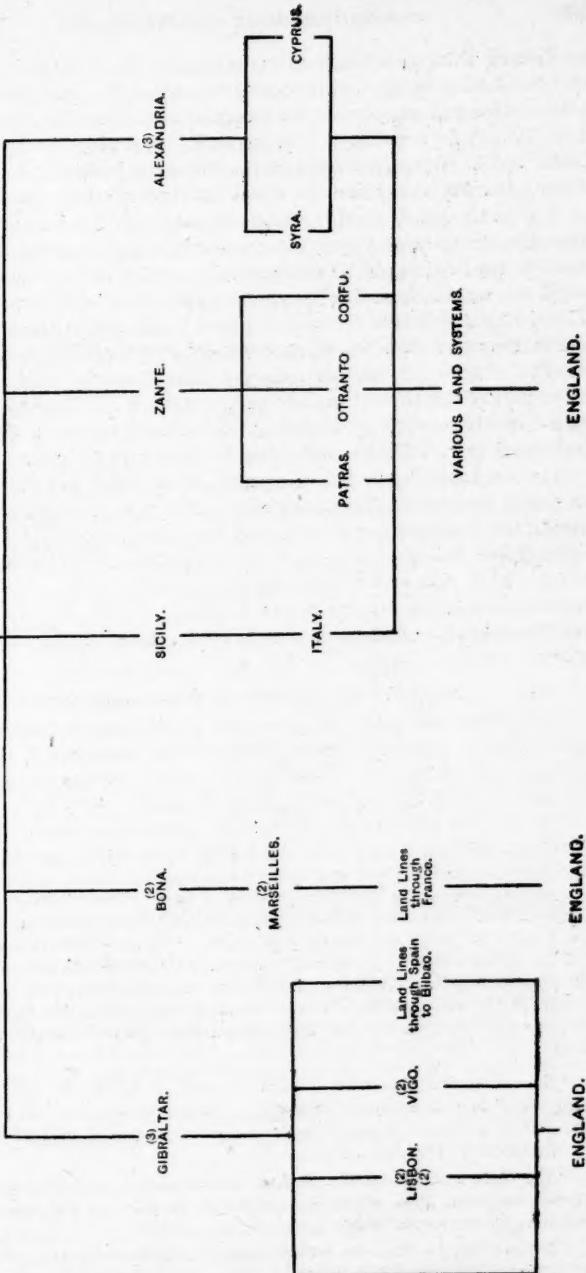
<sup>1</sup> In the Crimean War, when we laid the submarine cable from Varna to the shore of the Chersonese, communication was established between our armies off Sebastopol and London or Paris. "They will be able," wrote General Larchy, "to send orders and counter-orders from Paris which will shake the command of the Army." Events largely bore out the prophecy, as Kinglake shows in "The Invasion of the Crimea," Vol. VIII., p. 284 *et seq.* Events in South Africa are too recent to seek for parallel cases.

<sup>2</sup> Cable companies have to keep small stores of cable for maintenance purposes, but this is kept down to a minimum on account of costly methods of preventing deterioration in store to which all insulated cables are liable, and also the expenditure involved in accumulating cable beyond immediate requirements.

<sup>3</sup> Compare Lord Wolseley's opinion:—"So close is now the network of telegraph lines in all civilised countries, that if one or more lines be cut in front, you can almost always send your message back over some line, that will enable you to get it by a roundabout road to its destination."

THE EXAMPLE OF MALTA TO ILLUSTRATE THE  
ALTERNATIVE ROUTES OF COMMUNICATION TO ENGLAND.

MALTA.



The figures in brackets denote the number of lines

the Eastern Telegraph Companies have gone a great deal further than what the Admiralty deemed necessary in 1885. We had then only two routes to Hong-Kong, one through Russian territory and the other touching at the French port of Saigon. A discussion took place in the House of Lords, and Lord Derby stated that he was authorised by "the First Lord of the Admiralty to say that the naval authorities, while not denying that a line from Singapore to Hong-Kong would be useful, did not regard it as of primary urgency, and that they considered that the expenditure which would be involved might be more usefully employed elsewhere." The line would have cost according to the estimate £20,000 a year to maintain. (*Times*, 15th April, 1885.) It is a grand testimony to the enterprise of British firms that they should have gone far beyond this, as anyone can see who chooses to consult reference books on the subject. In the earlier part of this paper I made a protest against the loose talk we sometimes hear concerning cable-cutting. There are assertions which are even more pernicious. We are told that telegrams passing through neutral territory are handed over to our enemies or are liable to be altered. It is impossible to disprove these assertions. They are sometimes made concerning our own territory as well, and they are nothing but assertions.<sup>1</sup> Surely it is sufficient answer to say that telegrams of importance can be sent in cipher, that even in peace-time about 90 per cent. of the cabling is done in code, and to require as proof any instance in which one Government has complained to another of any such abuse as tampering with the cables.

What is proved is that the policy of British-owned cables has placed us in a position which has enabled us as a belligerent to censor messages and compel all nations to deposit with us the codes which they wish to use while we are at war.<sup>2</sup> We have a gigantic power, though whether it is wise to use it like a giant is another matter.

<sup>1</sup> This is different in kind from information conveyed by seemingly innocent messages to neutral territory and thence to an enemy. Very early in the history of submarine telegraphy this danger showed itself. Thus during the Crimean War the *Times* commented on the fact that information was continually being sent from London to Berlin and thence to Warsaw. "We are well aware of the fact that, during the whole of the war, the shortest route from Sebastopol to London, and consequently from London to Sebastopol, has been through St. Petersburg." (*Times*, 7th December, 1854.) The same thing occurred in the Franco-German War, the victorious army receiving information from Paris via London and Berlin.

<sup>2</sup> The following quotation, which I used in an article on "Submarine Telegraphs" in "Commercial Intelligence," seems so apposite that I reproduce it here. It is a report of the French Budget Commission of 1896 (translation, *Electrical Review*, 10th April, 1896):—

"We have laid before the Budget Commission a map showing the international telegraph lines, which indicates that all parts of the world are, as it were, caught in a net, of which London is the centre.

"Not wishing to make the present report too tedious by long quotations, we give as appendices the following:—

I turn to other political considerations. At this moment, when we are trying to arrange for common action with the United States in the Far East, it seems unwise to deprive ourselves of the opportunity of linking our cables to those of the United States to the Far East. The sole disadvantage of such a proceeding would be if the United States were at war, her opponent might cut our two cables in the territorial waters of Hawaii. I say two cables, because whatever the route we must have two cables. Breaks sometimes last six or even twelve months,<sup>1</sup> and it is not businesslike to contemplate maintaining a staff along the routes for many days in idleness. For this reason cables are duplicated in practice, though one cable may be well able to cope with the work. It was stated in evidence by the Eastern Telegraph Company in 1896, before the Pacific Cable Committee, that one cable between Java and Australia could carry all their traffic, whereas they have three cables. There are four alternative routes to Aden, three routes thence to Bombay, and beyond Bombay the cables are either duplicate or triplicate to the Far East and Australasia.

The general conclusion I have formed may be summarised thus:—

1. Trade is tending to be arranged exclusively by telegraph.
2. Trade also tends to work with smaller margins of profit than formerly, so that a small saving in telegraphic expenses is a great gain in competition.
3. That a highly artificial system is being produced in which the warehouse system is being displaced, and we are tending to a dependence on day by day supplies of food and raw material arranged for through the agency of the telegraph.
4. That while the telegraph is useful for political and strategical purposes, it is indispensable for commerce. In laying lines to assist commerce, we obtain all we want for other purposes as well. Our policy ought therefore to be directed to laying and maintaining cables with the single aim of assisting commerce.

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"1. A list of cables crossing the North Atlantic.

"2. A recently published list of the principal submarine telegraph cables of the world.

"An examination of these papers will show that a telegram dispatched from any point of the globe cannot reach Europe excepting over the network of English cable; that all the extra-European nations (and those of Europe also) pay tribute to England; that the entire commerce of the world is taxed for her benefit—a tax which cannot be slight, as it suffices to remunerate her for the enormous capital of more than £32,000,000, which represents the cost of this extensive system of cables.

"It is a 'pure grab' on the international communications of the world, of which, from this point of view, the various countries are vassals to Great Britain."

The statements in this report are fairly accurate, for, in 1897, Sir Henry Maine pointed out in an address on "Submarine Telegraphy" of 1,300 submarine cables, aggregating 162,000 miles, and costing forty million pounds sterling, no less than 75 per cent. represented British capital.

The French Government pay nearly £100,000 a year to our cable companies.

<sup>1</sup> *Vide Appendix, "Notes on Breaks in Cables."*

5. Following commercial routes, cables will obtain the protection of cruisers patrolling the route.<sup>1</sup> At the same time it is more difficult for the work of cutting cables to be performed in secrecy, owing to the shipping along the route. Finally, landing at a commercial port, the protection of the port involves the protection of the cable ends and telegraph station.
6. That in war the Navy has no fixed bases, and special strategical cables are required from time to time. This can only be provided for by seeing to it that the resources exist, and as far as can be foreseen, all possible routes are surveyed.

I would in particular draw your attention to the fact that really successful operations against cables are dependent on command of the sea. This conclusion is borne out by history, for with the exception of some successes on the part of the Germans in the Franco-German War, the Power commanding the sea has been the only one to cut cables. We stand in more danger of a breakdown in our communications from natural causes than from the operations of an enemy. Even with the command of the sea the United States failed to isolate Cuba from telegraphic communication. It is therefore our policy to lay the cables so that repairs are easy, and, for the reasons I have already given, to touch friendly neutral territory as often as will benefit commerce. Our guiding principle is to open up the widest market, cheaply and efficiently, so as to get the network of cables, like the shipping and the coal supplies of shipping, into our hands. In this manner you will increase the power of the British Empire in peace and war far more than by following that plausible cry for All-British cables. Best of all, in this particular instance of the Pacific cable, you can cement the ties which make for Anglo-Saxon union—

“When love unites, wide space divides in vain,  
And hands may clasp across the spreading main.”

We inserted those lines on a memento of a banquet we Englishmen gave to Admiral Erben, Captain Mahan, and the officers of the American cruiser “Chicago” in 1895. They were taken from the headlines of an article by a British Prime Minister on “Our kin beyond the sea.” They were telegraphed across the Atlantic to send a thrill of gratification through the hearts of Americans. The American Ambassador, Mr. Bayard, quoted them again in a great pro-English speech. We make those words a mockery if we take our cable past the territory which marks the first stage in America’s colonising mission. We make them a reality if we treat her as an ally. Truly we say this Pacific cable is a great issue. It is

<sup>1</sup> I must guard myself against a popular error which supposes that to protect cables we must station vessels along the route. The naval method of protection for the Empire and all its interests is to watch the enemy's ports and to intercept vessels at their starting-points. It is for this reason that I maintain that the vessels the Russian Government equipped in 1878 for cutting cables would never have had the opportunity of doing so to any extent, in spite of the scare Lord Carnarvon raised over this matter.

a touchstone of our policy for years to come, and it appeals to us to-day in the form of two great alternatives which it is imperative should be placed fairly before the public.

## REFERENCE TABLE.

Record speed of cable making.	52 knots per diem.
Record average speed of cable making in a length of over 1,000 knots.	38 knots per diem.
General average speed of cable making.	28 knots per diem.
Output of cable-making companies in United Kingdom—allowing for existing supplies of materials.	18,000 knots per annum.
Average speed at which cables are laid.	7 knots per hour, and faster in deep water.
Speed of coiling cable in cable-ships.	5 knots per hour—using two tanks.
Highest speed reached in laying cables.	8 to 10 knots per hour.
Slack allowed in laying cables.	10 per cent., e.g., a distance of 1,000 knots requires at least 1,100 knots of cable.
Surplus cable taken in cable-ship for laying a span.	15 per cent.
Longest span of cable among existing submarine cables.	Cape Cod (Massachusetts) to Brest (France)—3,174 knots.
Length of submarine cables of the world.	178,000 knots.
Length of Government-owned cables.	20,000 knots.
The world's cable-ship fleet.	42 vessels.
British and American-owned cable-ships.	34 vessels.
Greatest depth at which a cable has been laid.	Bermuda to Turk's Island—18,900 feet.
Cost of submarine cables of the world.	Over £50,000,000.
Average life of a cable.	25 years; though cables are still working with a life of over 30 years.
Guaranteed life in modern contracts.	No guarantee ever given.
Greatest depth at which repairs have been effected.	About 2,500 fathoms.

Greatest length at which messages have been sent experimentally.	4,733 knots.
Average length of code words.	8 letters.
Length of words used in estimates of speed of cabling.	5 letters.
Estimated speed of All-British Pacific cables.	12 words a minute (of 5 letters each).
Speed attained on Atlantic cables.	44 words a minute (of 5 letters each).
Highest speed attainable by ordinary instruments with hand manipulation.	30 words a minute (of 5 letters each).
Speed in code words.	8ths of speed given.
Highest speed by automatic system (without duplex).	50 words a minute (of 5 words each).
Increase resulting from duplex. (Depends entirely upon the length of the cable, and the adjustment of the receiving apparatus.)	About 80 per cent.; as much as 200 words per minute have been recorded.
Formula for speed of cabling.	Speed varies inversely as the length for the same cable, thus : If 500 knots gives 120 words a minute, 1,000 knots gives 30 words a minute, 2,000 knots gives $7\frac{1}{2}$ words a minute. Given equal weights of copper and gutta-percha in each case, we can get the same speed for a length A, which is twice as long as a length B if we make the core weights of length A twice as heavy as length B. Again, if length A is three times as long as length B, to get the same speed we must make the core weights of A nine times as heavy as B.
Amount of cable from ship to where it touches bottom, laying cables in 3,000 fathoms.	Depends on speed of laying, but may be taken as 20 knots.
Weight of moderate-sized cable that can be supported in sea-water without breaking on grappling.	9 miles ; or $4\frac{1}{2}$ miles on each side of the grapnel, with a new cable.

Strain put on a cable in lifting bight for repairs in moderate weather from a depth of 3,000 fathoms.	About 6 tons; but strain depends upon the height that the bight is lifted.
Breaking strain of largest cables — the Valentia-Newfoundland Cable of 1894.	8½ tons, when new in 1894; but less as it gets older.
Weight of Valentia-Newfoundland Cable of 1894.	2·01 tons per knot in air; 1·13 tons per knot in sea-water.
Marine life injurious to cables.	Generally, about 100 fathoms; but less at greater depths.
Strength of wire-rope required to use with a grapnel or ordinary anchor, steaming ahead $\frac{1}{2}$ knot to cut enemy's cable.	Depends on depth; but rope must be at least three times as strong as cable.
Lengths of cable on the Eastern Extension Telegraph Company's All-British Cape to Australia route, allowing 10 per cent. for slack.	Durban to Mauritius, 1,758 knots; Mauritius to Rodriguez, 398 knots; Rodriguez to Keeling, 2,198 knots; Keeling to Perth, 1,746 knots; Perth to Glenelg, 1,592 knots.

## APPENDIX.

## NOTES ON BREAKS IN CABLES.

The following table was furnished me by the Eastern Telegraph Company in response to my query as to the times during which communication has been entirely cut off from the Cape during the last ten years. With the new cable *via* Ascension and St. Helena, and the projected one to Australia, we may surely look forward to a continuous return of "nil" interruptions in future years—whether we are peace or war:—

*Total Interruptions with South Africa.*

Date.	Cables interrupted.
1890 ...	nil.
1891, January 1st-4th ...	Benguella Mossamedes and Aden-Zanzibar
" December 5th-10th ...	Mossamedes-Cape Town and Aden-Zanzibar
1892, February 3rd-16th ...	St. Thome-Loanda and Aden-Zanzibar
1893, January 5th-11th ...	St. Thome-Loanda and Mozambique-Lourenço Marques
," February 20th-25th ...	St. Thome-Loanda and Aden-Zanzibar
1894 ...	nil
1895 ...	"
1896 ...	"
1897 ...	"
1898, June 14th-19th ...	St. Thome-Loanda and Mozambique-Lourenço Marques
1899 ...	nil

## SOME CAUSES OF BREAKS

*Insect Life.*—These swarm in about 30 to 70 fathoms, and are known to have caused breaks in cables at 800 to 900 fathoms. In most exposed parts the cables are covered with a metal covering to protect them from insect life.

*Fish Bites.*—The Eastern Telegraph Companies in their evidence before the Pacific Cable Committee stated that breaks had been caused by fish bites.

*Volcanic Action.*—The Eastern Telegraph Companies have had their cables interrupted on several occasions by volcanic action, landslips and earthquakes.

*Bonfires on the Beach.*—Interruptions of subterranean ends of cables have been caused by bonfires.

*Corrosion.*—Weakening the strength of a cable, and preventing it from being lifted for repairs. This has been largely got over by taping and compounding each wire.

*Ships' Anchors.*—Picking up cables. This is arranged for by making cables specially strong in shallow water. The weight may run up as high as 20 to 28 tons per knot in air. The companies readily pay compensation to fishermen losing their anchors in this way; and, as far as possible, the shore ends of cables are protected by prohibiting vessels from anchoring in their vicinity. No less than 13 anchors were picked up once in a four-mile length of cable in the Firth of Forth.

*Friction.*—This cause of breaks has already been referred to. Generally speaking, in the tropics the decayed marine life—except for coral reefs—makes a soft bed, and even covers the cables with a thin layer. This marine life does not exist in cold water. In the cold regions the icebergs, too, bring down imbedded rocks, which are deposited on the ice melting—so forming a rocky bottom.

## CUTTING OF CABLES.

As there is a prevalent notion that deep-sea cables are very difficult to attack, I must emphatically point out that the only certain thing is that they are very difficult to repair. As for the attack, let me quote the following authoritative statement in the form of question and answer before the Pacific Cable Committee:—

*Question (2119):* “How long would it take in two or three thousand fathoms to grapple and destroy a cable—the shortest time?”

*Mr. Saunders:* “It would take five or six hours, I should think, for the grapnel to sink. It could be done in the twenty-four hours, given sufficient gear and a powerful vessel. There is no difficulty in breaking the cable.”

Of course, Mr. Saunders is now considering the case of a vessel which has luck on her side. That the attacking vessel knows the approximate position of a cable is generally the case, as during the process of laying the position of the vessel laying the cable is telegraphed home for reference and to avoid interference with its

property in peace-time; a cable company will naturally inform others where that property lies.

For the actual figures I must refer to the Reference Table accompanying this lecture. For the rest, I may say that given the wire rope and grapnel three times as strong as the cable, you can take the wire to the capstan, and the mere fact of getting a strain and being able to heave in shows that you have got a cable and not a rock. Then the only thing remaining to do is to break the cable by heaving in on the capstan or steaming ahead. Of course, a skilled man would tell if the grapnel has got a cable, quicker than an unskilled man.

The Power whose policy it is to obtain command of the sea and will probably get it, will naturally prefer to leave such of the enemy's cables alone, as may be useful in the work of blockade, awaiting such time as they can be cut at a suitable spot and the ends taken on board or buoyed for future use. The weaker naval Power, whose policy it is to harass us in all possible ways, will naturally prefer to resort to deep-sea cable cutting for the following reasons:—

1. It is done out of sight of land, and therefore attempts are more likely to escape observation.
2. A break is much harder to repair, and a hostile cruiser will have to be localised for the protection of the repairing ships.
3. Ground can be selected which is free from rocks and inequalities.
4. There is not the same danger of dummy cables being laid down by the defence as there is inshore, or of the cable being buried.
5. A spot can be selected which is at the maximum distance from the base of the cable-ship.
6. The cables are always made much stronger and heavier inshore to resist friction, anchors, etc.
7. Inshore there is always a risk of uncharted dangers, and, if boats are used, of their crews being annihilated by rifle-fire.

An account of actual cable-cutting operations in war is omitted from this paper for separate treatment.

#### THE SURVEY QUESTION.

As it would take the best equipped company at least two hundred days to survey the proposed Pacific route, and an ordinary naval surveying vessel on the Hydrographer's estimate three years, the question of how much survey is necessary is one of great importance.

From the Report of the Pacific Cable Committee, p. 166, it appears that Sir Sandford Fleming, whose opinions have carried great weight in the Pacific Cable controversy, now lasting into some fifteen years, is of opinion that the need of a survey is exaggerated. He says:—"It would require soundings to be taken in a very comprehensive manner to give

even an approach to a full knowledge of the sea-bed, and that it would involve much cost and prolonged delay. However valuable such a survey would undoubtedly prove from a scientific point of view, it is by no means indispensable to the laying of a cable or to its effective maintenance. Cables have been laid, and successfully laid, when no such comprehensive surveys have been effected; indeed, the best information goes to show that a large proportion of cables at present submerged have been laid without any precise and detailed knowledge of the sea-floor." As, however, this country does not wish to have a repetition of the history of the Uganda Railway, or still less of the Panama Canal, we may be sure that the survey will be made as advised by all the Cable Companies' witnesses. It is on record that in a survey by two ships of the eight hundred-mile course between Spain and the Canary Islands, a submarine mountain was discovered rising from a depth of 2,400 fathoms to within about fifty fathoms of the surface. A cable laid across this must have parted at once. In spite of the very careful preliminary survey, another sharp rise was not sounded. Only the precaution of having a ship sounding ahead prevented the cable-ship from laying the cable with the same slack as before. Even so, a cable having to go over such sharp transitions of depth must part long before its natural life is run.<sup>1</sup>

Apart from the fact that it is impossible for the cable in such circumstances to lie on the bottom, these shoal patches are nearly always hard bare mountains and chafe through the protection of the cable. Thus Mr. Carson, the Manager of the Anglo-American Cable Company, said before the Pacific Cable Committee:—"If you can get your cable into white chalky ooze, the cable would last for ever. If you lay a cable which has a plain galvanised iron wire covered with tape on rock, the tape rubs off and the iron begins to oxidise immediately; therefore you quite understand the cable will not come up." That is when you want to repair the cable, its strength is so impaired that you cannot lift it. You would have to cut and lift it elsewhere and replace the impaired length. Mr. Siemen's invention gives the depth at the spot where the cable is touching the bottom which, in deep water, may be 15 miles astern. This is almost useless to a cable-ship, as far as the actual laying of the cable is concerned. If a ship were sent 20 to 25 miles ahead, a modification of the invention might be used and the wireless telegraphy signal the results to the cable-ship.

It seems a fair conclusion that a preliminary survey is necessary at 10 to 15 miles distance between soundings to enable firm offers to be placed when tenders are called for. Zigzag soundings should be taken wherever marked inequalities of the sea-floor occur. Of course, for war purposes we may have to lay a cable over a partially surveyed route. In that case ships ought to sound ahead during the actual laying of the cable.

<sup>1</sup> Mr. Carson stated that their 1869 cable had been broken down five and a half years out of twenty-four, and all their breaks had been on the two ridges which cross the Atlantic. With a deep-sea cable, if a span of ten miles is stretching without touching bottom, you have a weight of 11 tons unsupported, and the breaking strain of the cable is 9 tons.

## THE TIME TAKEN FOR REPAIR.

The time taken for repairs is a very variable factor, and is naturally longer in deep water where, as stated in the Reference Table, repairs have been carried out in depths up to 2,500 fathoms. Fine weather is of the utmost importance. Thus the repair of the Eastern Telegraph Company's cable between Porthcurnow and Lisbon took 215 days and about 300 miles of new cable.<sup>1</sup> This, however, was in 1882 before the system of cutting and holding the cable in deep water was brought into use. The Aden-Bombay section was broken in 1,900 fathoms for 251 days. For 148 days the cable-ships could not work owing to the monsoon. It took 176 miles of new cable to effect repair.

The Anglo-American Telegraph Company's experience is up to 1895 :—

1869 cable	-	maximum interruption of 10 months.
1873	"	" " " 46 days.
1874	"	" " " 1 year and 2 weeks.

Cost £87,000 to repair.

1880 cable first broke in 1883 for 42 days.

1894 cable was cut in 1896 to take out a small electrical fault. The manager informs me that "it is now in as good electrical condition as the day on which it was laid—mechanically, of course, it is weaker, as six years of its life have gone."

The manager of the Commercial Cable Company answers my queries in a letter dated 11th May, 1900 :—

1. There has been no single interruption or stoppage of the 1894 cable since it was first opened for traffic in July, 1894.
2. The interruptions to our cables have been almost entirely confined to shallow water, and repairs are thus more dependent upon suitable weather for ship's work than upon difficulties due to raising the cable to the surface from great depths. One repair last year was delayed 22 days by bad weather, the cable having been broken by a steam trawler.

This company owns 9,090 nautical miles of cable, and the average number of interruptions during 15 years is 1 per 2,524 nautical miles per annum.

(The writer of this paper disclaims any originality of research. In compiling the paper he has consulted numerous magazine articles, pamphlets, and Parliamentary debates. Amongst reference books he has consulted "Bright's Submarine Telegraphs"<sup>2</sup> and the "Electrical Trades Directory." He has been indebted to the evidence in the Pacific Cable Blue Book for many of the figures used in his paper. He apologises if the paper bears evidence of hurried compilation, but he prefers to run this risk rather than defeat the object of having a full discussion in the head centre of Service thought and opinion, the Royal United Service Institution.)

<sup>1</sup> *Vide* evidence Pacific Cable Committee.

<sup>2</sup> "Submarine Telegraphs: their History, Construction, and Working," by Charles Bright, F.R.S.E., A.M.Inst.C.E. (London: Crosby, Lockwood, & Son.)

MR. CHARLES BRIGHT, C.E., F.R.S.E. :—It is very difficult, Sir, to properly discuss a paper covering so much ground in so short a space of time, especially if one has not had the advantage of seeing it beforehand. My remarks must, therefore, be of a somewhat general character. I think Lieutenant Bellairs has dealt with the subject, as a naval officer and from the telegraph companies' point of view; in an extremely able manner. It is interesting, if only on account of being the first time that the public have had an opportunity of having this view presented to them, except, perhaps, at companies' meetings and so forth. It is also interesting as the first complete exposition of naval opinion—or, at any rate, of a naval officer's view. So far as I can gather, the author has, on the whole, endeavoured to treat the subject more strictly from the strategical point of view; and, as Sir Edward Sassoon is reading a paper on the same subject from a commercial aspect at the Society of Arts this very afternoon, I think it will be best for me to confine my remarks as closely as possible to the strategic side of the question. I am sorry Sir Charles Dilke is not here, because I know he would have expressed what I have to say very much better than I can do. So far as I am personally concerned, as an engineer, my views are absolutely in accord with his. Speaking generally, my opinion is, that the more cables we have the better. These should be on a variety of routes, and in all sorts of directions, especially seeing that the companies—quite wisely from a business point of view—in laying their original lines confined their attention pretty well to the trade routes, or what Lieutenant Bellairs calls the "natural routes." If by "natural routes" he means those that lend themselves to the largest market for commerce, I quite follow him; otherwise I do not, any more than I can understand how such routes can be said to be "Imperial" routes. In the early days of submarine telegraphy I believe it really was suggested that the trade routes were the best routes for cables from a strategic standpoint, apart from the business aspect, but I do not fancy these routes were actually selected on anything else but a commercial basis. I cannot see how the network of cables passing through the Mediterranean can be properly viewed as strategic lines, seeing that they all touch on foreign territory, when we remember that a country which is neutral to-day may be unfriendly to-morrow. But in any case I think there is a mass of evidence in favour of alternative lines, and, seeing how well the companies have netted the favourite trade routes, it seems to me we should now strike out further afield in more out of the way regions. Moreover, I think, from a business aspect, there is everything in favour of a wholesome competition in matters telegraphic. The effect thereof is well instanced in the reduction of the Atlantic tariff produced by the lines of the Commercial Cable Company—the one concern that has rigidly refused to join the "Atlantic Pool." The rate here was originally £20 for twenty words; it is now 1s. a word, which reduction it would never have reached but for the Commercial Cable competition with the pool. Whilst quite recognising the value of cables being laid in waters where our battle-ships are naturally situated, I venture to think there is also, from a strategic point of view, a great deal in favour of lines being laid right away from our European "friends," and in deep water (where they would not easily be picked up by a battle-ship, yet capable of repairs by a telegraph-ship), with few approaches to land, and landing only on British soil. I certainly think this new policy should be given a trial now for any immediate alternative lines. I consider that the "All-British" Pacific Cable would best meet the immediate needs on the principles I have ventilated, and would be the most effective means possible of binding together the Empire. But I do not think we should stop there. In my opinion we require a complete network of Imperial cables—not only for strategic reasons, but also for encouraging a more close business and social union between each branch of the Empire. Another extremely useful line is that proposed by the Eastern Associated Companies (as a "set-off" to the "All-British" Pacific Cable) for connecting up the Cape to Australasia—especially as, under the fire of criticism, it is now

proposed to land it at Adelaide, instead of being dependent on an extremely inefficient land line from Perth to the important side of Australia. But this cable cannot be considered at all in the same light from an Imperial point of view. For one reason, it does not touch Canada. The author's technical objections to what he calls the "artificial" route, *i.e.*, the "All-British" Pacific Cable, do not, I think, amount to much. He naturally pins most of his objections on the long section. But 350 nautical miles in excess of anything previously laid would not be considered at all a serious objection by the engineer, except so far as the reduction of speed is concerned with a given type of core; and it is admitted that this line will, in any case, only provide a medium speed of working. Lieutenant Bellairs seems to forget that the same objections that he raises to this line about equally apply to the line proposed by the companies whose cause he has so valiantly set forth. Another of the author's objections to this line is on the score of depth, but he ignores the fact that the greatest depth involved only exceeds that in which cables have already been laid by some 350 fathoms. Lieutenant Bellairs further objects to the "All-British" Pacific Cable on account of its cost; yet the cost of a submarine cable is often a small matter as compared with a battle-ship. On account of its largest section, he assumes not only low speed, but also (1) expensive type, and (2) high rates; whereas the fact is that the rate proposed will be substantially lower than the present "Eastern" tariff to Australia. Oddly enough, in throwing in this argument the author somewhat defeats his object; for the very existence of this movement, now gaining such force, is largely due to the high rates asked on lines heavily subsidised by the Empire. Thus I find myself in cordial agreement with much that he says on the rate subject, which practically all points in favour of a wholesome competition. We are also at one where he says "The naval requirements may be said to be the same as those of commerce, *viz.*, a multiplicity of routes, so that if the cable is lost in one direction, the message can be sent in another." That sentence in Lieutenant Bellairs' paper represents my views precisely on all grounds, the only difference between us being, apparently, that he believes in a multiplicity of routes comparatively near to one another, in fact, something more in the nature of a multiplicity of *cables* worked by the same hands, and handy for foreigners as well as for ourselves; whereas I believe in these being supplemented by others in entirely fresh, out of the way (and what he would call "artificial") routes. But though the author does not believe in an "All-British" Pacific Cable, he does believe in what may, I suppose, be termed an Anglo-American Pacific Cable. So do I; and I should like to strongly endorse much that he says in its favour, without in any way conflicting with my views on the proposed "All-British" line. I should like to point out, however, that the Americans have really had their line, in one form or other, as long under consideration as we have ours; so that it can scarcely be said, I think, that we are risking unfavourable criticism at their hands in pressing forward the "All-British" line at this particular moment. Moreover, in point of fact, the objection of depth to which Lieutenant Bellairs attaches such importance in the case of the "All-British" route would equally apply in the American line. Anything which would more firmly tend to cement what seems to be the most natural union in the world—*i.e.*, that of the Anglo-Saxon, English-speaking races—could not, in my opinion, receive too much support. Such a union would, indeed, render us independent of European politics. An Anglo-American Pacific Cable to Japan and China would not only further this idea, but would surely be an eminently useful line just now—in view of the opening up of China at no distant date and of the extreme importance of naval supremacy in the Pacific. But a short while back I ventured to call attention to the value of an Anglo-American Pacific Cable on these grounds in the course of a recent article in the *Fortnightly*.<sup>1</sup> Turning again to the proposed "All-British" line, there must be

<sup>1</sup> "An All-British or Anglo-American Pacific Cable," by Charles Bright, F.R.S.E.—*Fortnightly Review*, September, 1898.

many of us who consider that, if only on strategic lines, this should be recognised as an absolute necessity of the age, especially at the present moment, without any great regard to cost which we know does not, after all, amount to anything very serious. It may also be fairly argued that even if there was a moment when some suitable recognition to our Colonial cousins should be made, that moment is now; and that this might well take shape initially in the laying of a telegraph line that would bind us to them and defeat space as effectually as is at present possible. Nothing would more surely tend towards the realisation of preferential Colonial trading. The Chambers of Commerce of almost every town in the Kingdom have urged the requirements of an "All-British" Pacific Cable, and the Associated Telegraph Companies must surely feel this as a thorn in their side. The companies have had a very long time to consider the whole question; and I cannot help thinking they would have done well to have made up their minds that more lines should be laid, and that the rates should be materially lowered, altogether beyond what they have been. In this connection, I do not think that the fact of supply creating demand has been sufficiently borne in mind. Railway companies evidently recognise this very fully, insomuch as they take a railway to, and open stations at, places which in the first instance could certainly not cover the cost, the result being that we now see suburban towns which previously were absolutely country. In referring to the Telegraph Companies, Lieutenant Bellairs asks:—"Where else can you go for your expert testimony as to cables in tropical oceans and over volcanic beds?" From this one must assume that the author is ignorant of the fact that many thousands of miles of submarine cable have been laid by engineers in the regions he speaks of—aye, in all parts of the world—in no way associated with the financial interests he refers to. Whilst referring to the allied telegraph companies, I will quote the words of the late Sir John Pender, which speak for themselves. Sir John once said at a meeting of one of his companies:—"The Pacific cable is not wanted, it cannot be laid; but if it is to be laid, we are the people to do it." Turning now to the subject of cable-cutting. It appears to me to be quite a mistake to suppose necessarily that all cables would be cut in time of war. At the same time, I think we may safely commit ourselves to the opinion that a certain number would be cut, and that consequently the more strings we have to our bow the better. I also think it will be admitted by most authorities that the deeper the water the less cables are prone to disturbance. I quite recognise, however, from a shareholder's point of view that people were more anxious to invest their money in lines passing through shallower water and which, in virtue of being on the ordinary trade routes, were more likely to pay. These cables are, however, the most liable to interruption; and even if such interruption is of short duration it might be extremely serious in time of war, or still more immediately preceding the declaration of war. The further you get away from foreign territory, the less liable is that trouble to arise. There is abundant evidence to show that cables *are* cut in time of war; but I observe that Lieutenant Bellairs refers to a letter of Professor Holland's in the *Times*, in which that gentleman endeavoured to show that such a thing was contrary to International Law—an interesting letter from an academic stand-point, but scarcely effective in answering the question of whether cables are, or are not, cut in war-time. There are one or two technical points that I should like to see set right in the paper; but they are not of sufficient interest to discuss here. I will, however, venture to touch on two. The first is rather an important one, *i.e.*, the question of the supply of gutta-percha. Notwithstanding the author's remarks to the contrary, I believe it is a fact that any of the existing big contractors would be prepared to lay a Pacific cable to-morrow if the order came for them to do so. Secondly, I should like some time to pleasantly discuss with Lieutenant Bellairs, the constant use in his paper of the word "knot." I know that naval authorities frequently talk of knots as a measure of length; but surely one knot is a nautical mile per hour, and therefore a speed

rather than an expression of distance. When I want to write nautical miles briefly, I write "nauts" or "N.M." In conclusion, I can only say the subject of the lecture has been dealt with in a most admirable manner, although I do not agree with all the arguments therein.

Colonel Sir G. S. CLARKE, K.C.M.G., R.E., F.R.S. (Superintendent Royal Carriage Factory, Woolwich) :—I think we owe the lecturer a debt of gratitude for the operation he has performed. I am not certain whether it is a surgical operation to prick a bubble, but I think he has pricked a bubble which was threatening to expand in a most alarming way. He has shown that the subject, from the point of view he has treated it, has been too much neglected in previous conferences. There was, however, a conference in 1891 of which we have not heard, and of which I was a member, representing the Admiralty, the Foreign Office, the War Office, the India Office, and the Colonial Office, which did discuss this question very fully, and went into its strategic aspects. As the report of that conference was secret—and things made secret lead to very little practical result—I do not know whether I am not incurring the pains and penalties of the Public Secrets Act in saying, after nine years have passed, that the general tenor of the results at which we arrived, and of the report we made, were very much on the same lines that Lieutenant Bellairs has traced to-day. I went into that conference with a sort of general idea that a cable was no use unless it never touched anywhere except on a British shore, that it ought to be laid in the deepest water possible, and in the longest lengths possible. I came out with an absolutely different opinion on all these points after having discussed the thing fully and heard the evidence of experts on the subject. I think there is something unwholesomely fascinating about the term "strategic." You speak of a thing as "strategic," and then people think there is nothing more to be said. You say you have a "strategic frontier," and nobody thinks of enquiring whether it is strategic or not. You speak of a strategic cable, and that seems to silence all objections. Strategy is really applied common-sense, and Lieutenant Bellairs has applied common-sense to this matter of the All-British Pacific Cable. It is a case where, as in many other matters, precision of thought is the first need. We must approach these questions with clear ideas of what is involved. I do not attach very much weight to the point about the non-liability of cables connecting a neutral and belligerent to be cut except in the belligerent's territorial waters. There is no international agreement at all as to the status of cables in war. In the Convention of 1888 we kept entirely clear of all attempts, which other Powers were ready to make, to obtain some recognition of neutrality for cables. There is no international agreement, as far as I know, to protect cables in war. But the question is a difficult one. I am quite certain that, though international law is a very fine thing for professors to write about in the *Times*, yet when it comes to actual war belligerents will do anything they can, unless it is absolutely contrary to the dictates of humanity and calculated to cause a shock to the moral sense of the world. It will not shock the world if the cables are cut, and therefore I think cables will be cut if the enemy can do it. Experience shows, however, that the difficulty of cutting cables is enormous, and that it is practically impossible except by a Power which has full command of the sea. I think a striking instance of this fact is to be found in the American war. There was nothing at sea to interfere with the cable-cutting operation of the Americans, and the fact that they could not isolate Cuba until the end of the war shows how very great was the difficulty. Lieutenant Bellairs' estimate of the present production of cable is 18,000 knots per annum. I should like to ask him whether there has been a diminution in the possible output of this country since 1891. Then the figures were given to me as 2,000 knots per month by three firms alone. It may be, of course, that the supply of gutta-percha and of copper has since fallen off and that the possible output is not so great as it was. It is an interesting point, and I should like to have his opinion upon it. The most important strategy to the

British Empire is the strategy of commerce, and to that everything must yield. Commerce depends, as Lieutenant Bellairs has told us, more and more upon cables, and the cheaper and the more certain cable communication is made, the better it will be for this country alike in peace and in war. I think it is perfectly clear that Spain in making cables, if she did make them, to Cuba, never had any strategic purpose at all; yet those cables served the purposes of Spain rather too well. It was by those cables that authority was obtained by Marshal Blanco to override the views of Admiral Cervera, and to send him to sea to certain destruction. Our policy, I think, should be to discourage monopolies and to encourage cheapness of telegraph communication and convenience for purely commercial purposes. For war purposes, we require to be ready with cable stored in readiness for repairs and for new lines in certain stations abroad, and we require to think out certain problems in advance so as to be prepared for what we may have to do. More than that I do not think our war requirements demand. Lastly, I should like to say that I entirely agree with what the lecturer has said about the United States. We have many dangers ahead of us, but war with the United States is not one of them; and I think that to pass by Hawaii, as is proposed, and to make a long and expensive connection with Fanning Island, would be not only an act of international courtesy, but a preposterous proceeding from the economical point of view.

Mr. ROBERT KAYE GRAY:—Speaking as a member of a leading firm of submarine cable makers, may I take the liberty of answering the question that Sir George Clarke has put to Lieutenant Bellairs? The manufacturers of this country can in full work turn out probably 100 nautical miles of submarine cable per day. There are three large firms in existence, and two firms of secondary importance. I gather from the remarks of the lecturer that he believes that there is no great danger in having cable landings in foreign countries because of the security given by the use of cipher. In my experience it is a great mistake to trust implicitly in the supposed secrecy of cipher.<sup>1</sup> The most difficult cipher can be translated if one has a sufficient number of messages to work on, knows who the correspondents are, and is aware of the probable nature of their correspondence. It is almost certain that the ciphers of every Foreign Office in Europe are easily translated by other interested Powers, and I expect with the other departmental codes the same thing exists. Several official messages sent during the present war have passed through my hands. In some of these a system of half-code, half-plain language is used. The deciphering of this class of message is child's play. During the Hispano-American war, owing to the maintenance of telegraphic communication between Havannah and Key West, it is not improbable that the Americans read the Spanish cipher messages. The best secret language I know is that evolved by the Wheatstone cryptograph. To this system there is the objection that messages coded in this way are expensive to transmit. While I do not believe in the security of cipher, I entirely endorse the lecturer's views that the line of communication least likely to be cut in war-time is that which has

<sup>1</sup> To appreciate how easily code messages are decipherable, I would refer readers to Plum's "Military Telegraphs in the Civil War" of the United States of America, published by Jansen, McClurg & Co., Chicago, 1882. An extract says:—"The Confederates were extremely unfortunate in their telegraph, mail, and signal codes. The former two were deciphered by Federal telegraphers, and the latter by Union Army signal officers. The knowledge of the enemy's flag and torch system gained by the signalmen was of very great consequence, especially during the battle of Wauhatchie, in the valley of the Tennessee, and under the shadows of Look-out Mountain. The translation of Beauregard's orders—which were signalled from Look-out Mountain, where he was directing the battle below—enabled the Union general, Geary, to meet force with ample resistance at the right moments. Thus it came about that the rebels were signally defeated."—R. K. G.

stations in the greatest number of countries. Safety of communication in this case is guaranteed by international interests. It is doubtful, however, whether this policy is advantageous to Great Britain. I am afraid that, on the contrary, it would give her enemy advantages which would not exist under other circumstances. With regard to the possibility of interrupting cable communication in war-time, submarine cables, as a general rule, are fairly safe in comparatively shallow water, say, between 20 and 100 fathoms; and in water over 2,000 fathoms in depth one may consider them as absolutely safe. To render their safety greater, the positions in which they are laid should not be divulged. I may state that, with full knowledge of locality and with fully-equipped ships, cable engineers sometimes experience considerable difficulty in executing cable repairs. It is evident, therefore, that in the actual state of the knowledge of cable work which exists outside of a limited circle the risk of interruption to cable communication in war-time is not exceedingly great. As an instance of this comparative security, I may mention that during the war between Chili and Peru, when Iquique was occupied by Peru, and the next large port to the southward, Antofagasta, was held by Chili, Admiral Grau, in the Peruvian war-vessel "Huascar," entered Antofagasta Bay with the intention of severing the telegraph communication existing between Antofagasta and the Chilian naval headquarters at Valparaiso. Admiral Grau was a distinguished sailor, and he and several of his officers had gained some slight knowledge of cable-laying through having been on board the vessels which laid the cables a few years previously. In his operations off Antofagasta Admiral Grau spent the best part of two days grappling in shallow water, and only desisted when he had hooked and broken a cable. Fortunately for the Chilians in Antofagasta, the cable he cut was not the line to Valparaiso, but that communicating with the Peruvian port of Iquique. I venture to give this instance as additional evidence to that supplied by the lecturer of how difficult it is for war-vessels to interrupt submarine telegraphic communication. I desire to join with the other speakers in congratulating Lieutenant Bellairs on the thoroughness with which he has treated a very interesting and difficult question.

Lieutenant BELLAIRS, in reply, said:—I do not propose to detain you much longer, as I know that several gentlemen are anxious to hear an important paper on the same subject which is now being read at the Society of Arts. I thought, in listening to Sir George Clarke's admirable speech, how much better it would have been if Sir George, instead of myself, had prepared a paper on this cable question. It was the speech of a man who knows his subject thoroughly, whereas I can only look upon it as a student. With his conclusions I agree. We must, however, guard ourselves against exaggerating the difficulties of cutting cables in deep water. If there is little risk of interruption from the enemy, and the position of the cables is approximately known, one can, with proper appliances, undoubtedly cut cables in deep water.<sup>1</sup> In a note on cable-cutting in the Appendix, there is an answer by Mr. Andrews in which he gives a very short period for the cutting of a deep-sea cable. With regard to the output of the country in nautical miles of cable—I am indebted to Mr. Bright for pointing out my erroneous use of the word knot<sup>2</sup>—I have not the matter concerning this output with me now. Sir George Clarke's question has since been answered by an expert, Mr. Gray, and I would naturally accept Mr. Gray's opinion. I must, however, point out that Mr. Gray's estimate of 100 knots a day is based on the full capacity of the works, and not, like

<sup>1</sup> The point I wished to dwell upon was that the rule applied here as elsewhere, that it is a great deal easier to destroy than to build up, and that I had no desire to see a "deep-sea cable" fallacy take the place of the "All-British cable" fallacy.—C. W. B.

<sup>2</sup> I explained before reading my paper that I was using the term "knot" as meaning nautical miles. It is a convenient term, which I propose to retain, though Mr. Bright is of course correct as to the original use of the word.—C. W. B.

my own, on the supply of gutta-percha. As Sir George Clarke thought, I am ignorant concerning the Report of the Conference of 1891. I am glad to hear that the conclusions of that Report bear out what I say in my paper. Two speakers referred to the question of international law. The only objection that I can see to Professor Hojland's view is that it is not laid down in any international argument. It seems to me sufficient that his view has been practically recognised in war, and the United States directly endorsed it by authorising cable-cutting only in the enemy's territorial waters. They were undoubtedly successful in cutting some of the cables within the three-mile limit of Cuba, though they did not cut all the cables. I quite agree with the view of Mr. Charles Bright that the more cables the better. I think that wherever you have commerce going it is very desirable that you should have cables going. I think we should follow the cheapest route, and we get all the strategic requirements we need in that way. Afterwards, as I have said in my paper, we can provide for any special strategical requirements by laying the cables in actual war. We have not the slightest idea where we shall require a strategical cable. The war may be in China, in South Africa, or in the Pacific, and if you arranged for all the strategical cables that different men can think of, you will probably find when war breaks out our operations will be in quite another direction, and you will be better equipped if you have the resources for laying the cable then and there. I beg to thank you for the kindness with which you have listened to my paper.<sup>1</sup>

The CHAIRMAN (Sir John Colomb, K.C.M.G., M.P.):—I am sure you will agree with me that we ought to, and will with great pleasure, accord a very hearty vote of thanks to the lecturer for the paper he has given us. As Sir George Clarke and others have pointed out, it is a careful and thorough survey from an Imperial point of view of the facts that our lecturer has made himself acquainted with, apparently untrammelled by any previous conviction as to what he wished those facts to prove. For my own part, I think the paper is a most valuable one just at this time, and I think it will be referred to hereafter as a valuable contribution when the discussions take place in the House and elsewhere. I also, in common with Sir George Clarke, hold very strongly the general conclusions of the lecturer, and Sir George Clarke has put the case so perfectly clearly in his remarks that I myself need not trouble you with making any observations at all. I cannot help, however, saying that I think anybody considering how this question of the All-British cable has arisen, and following it even in a superficial way, must rather be driven to this conclusion, that when the commercial arguments in favour of that All-British cable on examination prove weak, then they use freely the strategical argument. I think the strategical argument was used as the crutch to help a weak commercial case. It is very important when our responsibilities are so great, when the demands on the public purse for what is necessary for the defence of this Empire and all that appertains to it is increasing, and likely to increase, that we should, in regarding any question of expenditure or public action, clear our minds from cant, and that the matter should be approached from the real businesslike and scientific point of view. I cannot myself help feeling that from that point of view the lecturer in his conclusions is right, and I think that Sir George Clarke, with his great experience and wide knowledge, and his great authority, has, in the few words he said, shown us

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<sup>1</sup> I failed to notice Mr. Gray's important point about the secrecy of ciphers. I would lay stress on the time element in the case, and I meant to have asked Mr. Gray how long it would take for the Foreign Office's cipher, which is really an elaborate dictionary, to be in part discovered. I would not attach much importance to its bearing on the cable controversy if it takes longer than three months. Sir Charles and Lady Napier, I believe, spent many months in discovering Napoleon's cipher, so enabling Sir Charles Napier to complete his great history.—C. W. B.

all how very careful we should be against being carried away by phrases such as "All-British," "Imperial," and other terms which are very good in their way, but are not sufficient *data* to base a theory or practice on for the defence of the Empire in war. I will take it without putting it that you each and all desire to place on record your great thanks to our friend the lecturer for the very excellent paper he has given us.

## THE GREAT TRANS-SIBERIAN—MANCHURIAN RAILWAY.

By ARCHIBALD R. COLQUHOUN,

*Gold Medallist Royal Geographical Society; author of "China in Transformation," etc.*

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Thursday, 7th June, 1900.

Sir LEPEL H. GRIFFIN, K.C.S.I., in the Chair.

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In the absence of Mr. Colquhoun in China, we are indebted to the courtesy of the Editor of the *Monthly Review* for the two maps which accompany the Lecture.

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ON two separate occasions, the first 15 years ago, the second in the summer of 1898, when I had the honour of reading papers before this Institution, I urged, in language whose warmth has been amply justified by the course of events, the necessity for some well-considered and consistent policy on the part of Great Britain in the East. Better almost a bad policy than none at all. The predictions made by me in these papers and in my book "*China in Transformation*," are being literally fulfilled under the very eyes of the world; but I do not draw your attention to this from any desire to magnify my own prescience. What I felt and what I knew were felt and known by every man who had made a study of the subject or whose life had been spent to any extent in the East—not, be it understood, in the European East—but in the real East, China of the interior, China of the little known south-west provinces, China of the Yangtze basin, China of the almost desert Mongolian steppes, China of fruitful and flourishing Manchuria, and above all, China of the Oriental capital, Peking, the nerve-centre of what was once a mighty Empire. This knowledge of China, however, would be incomplete, without a further knowledge of other countries—more especially other Asiatic countries—India, Burmah,

Japan, Russia—but above all that part of Russia which will shortly be known as the New Siberia. It is only recently that I have been able to complete my knowledge of these countries by a 7,000 miles journey across Asia, from St. Petersburg across Siberia and China to the remote south-eastern province, and to the Gulf of Tongking, the results of which are embodied in a book shortly to appear, entitled "The Overland to China, or the New Siberia."

My task to-day is to deal with one section of the problem which is presenting itself in the Far East, namely the Trans-Siberian-Manchurian Railway, a work destined to play a premier part in the transformation of Asia.

It is a well-known fact that there are two ways of seeing Russia in general and Siberia in particular. The first is under quasi-Government conduct, and all those whose object is to travel in luxury or to meet everywhere with deference, and frequently with obsequiousness, naturally seek for official introductions to high Government authorities. But, like everything else, the convenience and comfort of the personally conducted system have to be paid for, and the payment in this case takes the form of general restriction of view, coupled with an obligation, enjoined by the merest courtesy, to speak nothing but what is pleasant and flattering to the country. One may, therefore, spend months under the vigilant care of Russian officials, so that not a hair of one's head shall be injured, and yet learn just as little of the country as does, for instance, a Viceroy of India, during his progress from Calcutta to Simla, of the dominions under his rule. We have had a recent example of this in the journey of a British official who was sent specially to report on what was occurring in Central Asia, and who, receiving the utmost attention and courtesy everywhere, yet never succeeded in getting either within several hundred miles of Kushk, or along the northern line to Andijan and Marshelan.

Those, however, who are prepared to face some amount of discomfort, or to chance the risk of detention, in order that they may be able to use their own eyes, without having the everlasting *ispravnik* (chief police official of a district) to take them by the hand at every stopping place, will probably find that, by travelling as individuals of no consideration, they will obtain a larger amount of information than would be possible under official patronage. This, at any rate, was the plan adopted by the writer when travelling in 1898-99 by the great Siberian Railway from Moscow to Irkutsk (to which point the railway was even then in working order) on his way to China. Whenever deviation was made from the plan of action decided upon, disappointment was the result. It may here be mentioned that the traveller who obtains Russian official assistance can cover the distance between Moscow and Peking in thirty and a half days—that is to say, by rail to Irkutsk, ten and a half days<sup>1</sup>; thence to Kiakhta by the post-road, four days; Kiakhta to Urga by post-road, three days; thence to Kalgan over the Gobi Desert in ten days, or even less; Kalgan to Peking in three days.

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<sup>1</sup> Now eight and a half days.

Many "hints to travellers" might be given, but one in particular should be remembered by those who go to Siberia in quest of information. It is to avoid the discussion of all political questions, and especially those of the prison administration and the convict system, as one would shun the plague. An American, who when young had spent some years in Siberia as a mechanical engineer, was once relating to the writer some of his experiences, and incidentally spoke of certain advice he had received from an old hand, a fellow-countryman of his own :—" Young man, let me whisper something in your ear. If you wish to stay in Russia, avoid politics and religion ; above all, never allow yourself to know there is such a thing as a 'convict system.' " At the present moment, perhaps, this advice may be considered less necessary, for the first place in the mind of everyone interested in Russian development is now, of course, occupied by consideration of the great railway scheme, of which the world has but recently taken cognisance, but which, nevertheless, is the slowly ripened fruit of nearly half a century's inspirations, suggestions, plans, and deliberations.

Whether regarded from a commercial or a political point of view, the urgent need for good communications in Siberia has been obvious to the Russian authorities for over a quarter of a century, although, it is true, this stupendous conception of a Russian-Pacific Railway was not from the beginning grasped in its entirety. The earlier plans combined rail and river communication, tramways, and ferries, and it was but gradually that the idea was conceived of the unparalleled achievement to which the Imperial rescript of 17th March, 1891, was to give birth. That famous document, read by the present Emperor, then Tsarevitch, at Vladivostok, in May of the same year, notified the adoption in fullest measure of the much-hoped-for undertaking, and announced "the immediate construction through the entire length of Siberia." Until the year 1880, the sectional system of railways was the one favoured, but eventually the Emperor took the matter in hand, and a grand unified scheme was adopted. The knot of all the technical official controversies between rival projectors was cut by him in the manner of his grandfather, who forty years previously settled the question of the route to be followed between St. Petersburg and Moscow by laying the ruler across the map and drawing with his pencil a straight line between the two termini. With what incredible energy the work—which marks, unless forecasts deceive us, a new era for the whole world—has been carried out since it was sanctioned by the Tsar is known. Outside interest, at first vaguely informed and rather languid, has increased with the approaching realisation of the enterprise ; and the great Siberian Railway now commands in public opinion the respect due to an almost accomplished work of such vast importance.

In course of construction the line has, however, become much changed in character. No longer a purely internal enterprise—running through unknown territories, to terminate at an obscure Russian port far away somewhere in the north—by the Manchurian alignment it has become the world's highway from West to East, a route which is to bring the vast Empire of China for the first time into intimate touch with

Europe. The scope of the railway has been infinitely enlarged. From being a merely domestic work, pertaining solely to internal administration, it has become a great international undertaking, and has passed into the domain of foreign affairs; from being little more than a local enterprise, it now promises to develop into one of the greatest arteries of traffic the world has yet seen, and into a political instrument whose far-reaching effects it is difficult to gauge.

How far this is the result of what would appear to be a fortuitous combination of circumstances, and how far the outcome of Russian foresight, must largely be matter for conjecture. Whichever view may be the true one—whether the result was brought about by chance or by statecraft—the fact remains that nothing could have turned out more happily for Russia. The course mapped out for the Siberian Railway, as originally announced to the world, could not possibly provoke either jealousy or hostility, whereas had the 1891 programme included, as does the present one, a short cut across a Chinese province and the extension southward to Port Arthur, with the establishment of a terminal fortified stronghold—another Sevastopol, in fact, commanding the whole Gulf of Pechihli and even Peking itself—the inevitable shock to the world must have jeopardised success. But, whether by design or accident, that shock was spared to the world, and the warnings of the few who could foresee events passed unheeded. The radical change in the character of the line has, indeed, been effected with the graduated gentleness and the assured result of a process of nature. That the railway is primarily a strategic line is beyond question, this being emphasised by the provision which has been made to keep the main line clear for through traffic in case of emergency.

Final choice of the line the railway was to take through Western Siberia lay between three much-discussed alternative points of departure, namely, Tiumen, Zlatoost, and Orenburg, at each of which points the Russian railways cut the Ural Mountains. Of these alternative lines, the one chosen was, in any case, to make its way to the fixed point of Nijni-Oudinsk, half-way between the Yenisei and Lake Baikal. The one *via* Zlatoost and Cheliabinsk, known as the central project, was the one selected.

According to the Imperial rescript, the total distance of the line to be constructed, at a total cost of £34,700,000, was, in round numbers, 7,080 versts, or over 4,700 miles; and it was divided into six sections, on which work was to be commenced simultaneously. These were Cheliabinsk to the Obi, *via* Omsk, 885 miles; the Obi to Irkutsk, *via* Krasnoiarsk, 1,169; Irkutsk to Listvenitchnaya and Mysovsk, on Lake Baikal (with ice-breaker, pier, harbour, and "train-ferry" across lake), 195; Mysovsk to Stretensk (the Trans-Baikal section), 673; Stretensk to Khabarovsk (the Amur section), 1,333; and Khabarovsk to Vladivostok (the Ussuri section, which is completed), 486 miles. This plan has been, however, as will be seen, considerably modified; particularly in regard to the abandonment of the permanent "train-ferry" crossing of Lake Baikal, in favour of a line round the southern edge of the lake, and of section five (Stretensk to Khabarovsk)—the longest and certainly not the easiest of

all. Until the Amur section was reached, the railway survey followed pretty closely the natural high-road eastward, and practically the only one traversing Siberia. Each section so far had been already surveyed and was easily determined on. But in Trans-Baikalia and the Amur region it was a far different matter. In the latter, the only road was that provided by the lower slopes of the river itself, the sole traffic on the lower Amur being by steamer in summer and sledge in winter. Around the southern edge of Lake Baikal some heavy tunnelling has to be done,<sup>1</sup> and the difficulties both of survey and execution are here, but in Trans-Baikalia especially, enormously increased, and it is reasonably open to doubt whether the authorities have for some years past seriously intended to make the main line run *via* the Amur. The fact that Russian engineers secretly made surveys in Manchuria even some years prior to the crisis of 1895, and the haste with which Chinese permission for the running of the line through Manchuria, with the necessary police to protect it, was then claimed—as recompense for Russian help against the Japanese—cannot be forgotten. It would therefore appear by no means improbable that a short cut across Northern Manchuria to Vladivostok had been planned many years ago, and that the inclusion of section five in the programme was merely tentative, while the project was maturing. As originally planned, the railway was to be constructed simultaneously from both ends, the line from the west to meet that from Vladivostok to Irkutsk. In the modified plan, however, the section completed from Vladivostok to Khabarovsk is not utilised, while from the other end the main line branches off at Onon, 100 miles on the west side of Stretensk, and at Nikolsk, 67 miles north of Vladivostok, joins the already opened section between that port and Khabarovsk. The section between Onon and Nikolaevsk is estimated at 1,200 miles, of which some 900 are on Chinese and over 300 on Russian territory. This reduces the total distance between Cheliabinsk and Vladivostok to about 4,000 miles, instead of 4,700; but these estimates of distance are vague and probably below the mark.

The line from Onon junction has been continued, as originally planned, to Stretensk, where it will be connected with steamboat traffic on the Upper Amur,<sup>2</sup> the main line running from Onon south-eastward, probably past Tsitsikar, Kirin, and Mukden, to the Gulf of Pechihli at Port Arthur; while a branch line will be built from Vladivostok, or rather from the Nikolaevsk junction, to join the Manchurian Railway at some central point on the Sungari. These sections are timed to be completed in the autumn of 1902, but before this date, in this present year, Russia, it is important to note, pending the full completion of the Siberian-Manchurian Railway, will have at her disposal an uninterrupted line of rail and river communication—rail to Stretensk, thence steamer to Khabarovsk, and

<sup>1</sup> At one time as much as two and a half miles of tunnel work was anticipated, but this has been largely reduced. The work, however, will be so heavy on this section that it will probably not be finished until after the completion of the remainder of the line.

<sup>2</sup> Already finished.

again rail to Vladivostok on the Pacific. As a supplementary measure, train-ferry-boats, as used in America and Denmark, are to be run across Lake Baikal from Listvenitchnaya (the harbour and pier on the west shore of Lake Baikal), to the opposite shore at Mysovsk.<sup>1</sup>

The estimate of the time required for the completion of the line to Port Arthur is based on the work already accomplished, which has all been done within the time calculated, the estimate not having been exceeded in any of the sections as yet opened. As the most extraordinary exertions are being made with the construction round the south end of Lake Baikal and from the Port Arthur terminus, working both ways, as well as in the centre, by means of the Manchurian waterways (the Sungari, the Argun, and the Ussuri, which are being made use of for the transport of material, some special tug-boats for towing rail-laden barges having already been imported from England), it is as certain as any such calculation can be that the time-limit for the remainder of the operations, *i.e.*, 1902, will not be exceeded. That year, I am convinced, will see the whole system in working order. Then Russia will be ready for her great *coup*.

If the original financial estimates have been exceeded, that, after all, is the affair of the Russian Government. The world is only concerned in the due accomplishment of the task which will work so great a revolution. It is of some interest to make, as far as the *data* are known, a rough comparison with what has been previously accomplished in the way of gigantic railway construction, and for that purpose we may take the first American line between the Atlantic and the Pacific. It must, however, be remembered that in the quarter of a century which has elapsed between the execution of the two undertakings wider experience and improved knowledge have accumulated to the great advantage of the Russian enterprise.

In sheer length the Trans-Siberian will be almost double that of the Trans-American Continental Railway. The maximum altitude of 3,608 feet, overcome by very gentle gradients while crossing the Yablonoi or "Apple" Mountains (so called from their rounded contours), cannot, however, for a moment be compared with the giddy precipices of the Sierra Nevada, or the 6,500 feet ascent of the Rocky Mountains. And although the Siberian plains are, perhaps, as scantily populated as were those of the Far West in 1860-70, they include no such waterless tracts as the Utah and Nevada wildernesses. Leaving Trans-Baikalia and Manchuria out of the question, the Siberian line was an exceptionally easy one from an engineering point of view. Beyond the Urals the rails could be laid in straight lines over immense plains. Between the Obi and the Yenisei there are but gentle undulations to be overcome. After crossing the Yenisei, a series of hills, never exceeding 2,000 feet, are traversed at right angles.

<sup>1</sup> The ice-breaker to be used on Lake Baikal was constructed by Messrs. Armstrong, and shipped in sections to its destination. Built entirely of steel, 290 feet in length, it is capable of breaking through ice several feet thick, and is to be in use during the winter months—that is, from October onward. The railway cars are to be run direct on board, and ferried across the lake.

In the whole distance from Cheliabinsk to Irkutsk no single tunnel occurs, no gradient steeper than  $17\frac{1}{2}$  in 1,000, no curve sharper than a 270 yards radius. Beyond Irkutsk, however, there is really serious work to be done, and the obstacles which have had to be overcome so far may be regarded as infinitesimal when compared with those which must be surmounted.<sup>1</sup>

Much attention has been given to the bridges, of which there are many, the Siberian waterways running in general from south to north, at right angles to the railway line. The four most important bridges, all now completed, are those over the Irtish and Obi, each about 930 yards long; and over the Yenisei and Selenga, each about 1,700 yards in length. The Obi bridge is a particularly fine structure, being at least 50 feet above the river at times of flood, while on ordinary occasions one looks down upon the waters from a height of 80 feet. The Yenisei bridge is similar in many respects, and, indeed, all the bridges are of the same type, being constructed of iron, with stone piers supporting spans which in some cases measure as much as 100 yards in length, and across which a single line is laid through girder and lattice work. Most Siberian bridges are of specially difficult construction, owing to the great variation of heat and cold, the swampy, inundated, and yielding nature of the river-banks and approaches, and the unusually solid stone supports required to resist the impact of ice.

In point of actual rate of construction, the Siberian maximum is far behind the American one, though it must be considered fast under the circumstances. Six versts, or three miles and three-quarters, per diem is the highest ever reached by the Russians—a poor record when compared with the ten and a half miles credited to American brain and Chinese labour on the San Francisco section of the American line. But the Americans, on the other hand, took nearly seven years to complete a distance of 1,800 miles; whereas in Siberia nearly a thousand miles beyond that amount was accomplished in less than eight years. As has been shown, the difficulties of the country itself were immeasurably greater on the American line, but, as a set off, it must be remembered that the working season in Siberia lasts only six months, from April to September, at other times the ground being frozen too hard for anything to be done. As the line is single, and the rails are merely laid on notched sleepers and clamped down on the inside, the speed in con-

<sup>1</sup> These are : (1) round the southern edge of Lake Baikal ; (2) eastward, across Trans-Baikalia from the lake to the navigation limit of the Amur (at or near Stretenesk); and (3) from the point where the Manchurian line, leaving the Trans-Baikal section of the Siberian Railway, at Onon, passes across the hilly country enclosed between the Argun and the Upper Amur, skirting the lower slopes of the Yablonoi range, from the Argun, continuing its route across the Khingan range via Hailar to Tsitsikar (or some place south of the town) on the Upper Sungari, in Manchuria. Beyond Lake Baikal there is a gradual ascent from 1,300 to 3,600 feet, through the valleys of the Selenga, and its tributaries; then somewhat abrupt ascent to the Amur, and after that a short section of some 200 miles along the mountain spurs and across the occasional marshes in the valleys of the Ingoda and the Shilka.

struction might perhaps have been even greater. Great precautions are taken in working the line, men being stationed at very short intervals with green flags, to show their section to be clear.

On the Siberian Railway the labour question—an enormously important one, since during the greater part of the construction no less than 150,000 labourers were employed—was saved from developing into a “problem” (as it would have done in another country) by the exceptional character of the Russian peasantry, who are not averse to being moved from one place to another. The population along the Siberian track proved, as had been foreseen, quite unable to provide the labour required. Neither were soldiers, as in the case of the Trans-Caspian line, available in sufficient numbers. Convict labour was tried, but, except in the case of Irkutsk, proved a failure. Fortunately, as remarked above, the Russian peasant is always willing to leave his home for two or three years, and proceed to any distance for assured employment. If possible, he likes to get home-leave for the harvest-time, but, in the case of the Siberian Railway, labourers had to content themselves with leave during the slack winter season. A few English engineers are employed on the ice-breaker and dock at Lake Baikal, but no other foreigners are employed. The Siberian Railway, as described to the writer during his journey, is “a Russian railway, made by Russian engineers, for Russia.”

Speaking generally, when all the difficulties are taken into due consideration, credit is due to the Russian authorities for the excellence of the main plan of the line, the good general organisation, and the rapidity of the execution. The last, indeed, may be held to cover a multitude of sins. The main object was, first and foremost, speed in completion—a rapid linking of west and east—and that has been attained. Overland communication, by rail and steamer, has already been almost established between Europe and the Pacific. Trains fitted up with all modern luxuries are now actually running through the heart of the Siberian wastes. As far as Ob-Krivoschikovo (the junction at Tomsk) a *train de luxe* was available when I passed, which includes library, gymnasium, bath-rooms, lavatories, and even a piano and thence weekly to Irkutsk. The ordinary trains are provided with buffets and other comforts and luxuries. In view of such a brilliant result, it may seem almost invidious to criticise such minor shortcomings as, until recently, the comfortless journey in cold weather across the Yenisei and Oka by ferry. The bridges over these rivers were not yet entirely completed when the writer passed over the line.

There are, however, more serious shortcomings than this. In the first place, the general plan, though in itself excellent, has been badly worked out in detail. The Russian-European engineers, quite unused (be it said in their defence) to mountains, which are rarely met with in their own country, often avoided easy slopes along the hills and carried the line through marshes where solid foothold was difficult to obtain, and where the line must be continually subject to inundations. The want of solidity of the low-lying sections was, indeed, the only problem of any difficulty that the Siberian Railway engineers, until they reached Lake Baikal,

had to face, and their solution of the difficulty redounds but little to their credit. In places cuttings, too, were frequently made where tunnels might well have been employed. To this fatal want of confidence in their skill in dealing with such problems, and the consequent frequency with which the line, often quite unnecessarily, is made to traverse swampy valleys, is mainly due the disasters that have hitherto occurred, such as destruction of the permanent way by inundation. In the Stretensk section the spectacle actually has been seen of three miles of rails, afloat on the sleepers, being carried down-stream. In the section beyond Baikal, now in hand, the difficulties, as before remarked, will be greatly increased, and will test the skill of the Russian engineers.

It is not only in the matter of engineering work, however, that the carrying out of the scheme is open to criticism. Many of the sections of the permanent way will have to be re-made, and most of it is insufficiently ballasted. As at present constructed, the lines would be incapable of supporting a continuous or heavy train service, and it is indeed proposed to use the rails for the construction of light branch lines for the transport of local products to favourable markets, and to lay down heavier metals in their place. Even in 1898 £10,000,000 were voted for the improvement of the permanent way in the western half of the line alone, although it was only just completed. Bad material, too, has often, from motives best not inquired into, been ordered from small local contractors. There has been, and still continues to be, a large amount of what must be regarded as barbaric waste. New engines have been seen lying uncased and rusting on the ground; twisted rails strewn alongside the track; sleepers allowed to rot before the time came to use them. Neither is it without good reason that peculation and misappropriation are alleged to be common.

The present intention is to re-lay the whole of the central and Trans-Baikalian sections with rails weighing 24 lbs. to the foot, instead of the 18-lb. rail now in use. In addition to this, 1,429 wooden bridges are to be replaced by stone and iron ones. The stations, all built on sidings, are at present about twenty-five miles apart; a recent order provides for the construction of additional sidings every few miles, the total additions amounting to 91. Orders also have been given for the ballasting of a greater portion of the permanent way. The expenditure involved in all these improvements is to be spread over eight years, by the end of which time it is hoped that a maximum speed of thirty-three miles an hour for passenger trains will have been attained.

Again, as previously mentioned, the cost of the line will greatly exceed the original estimates, at first thirty-five and later thirty-eight millions sterling, which were in their mileage rate low as compared with that of England. According to competent authority, this is estimated at £50,000 per mile, at which rate fifty millions sterling would not have carried the Siberian Railway much beyond the Obi. But in comparing the English and Russian charges, the cheapness of labour, and the altogether insignificant cost of land—in the latter country practically *nil*—must be taken into account. The final cost of the Russian scheme promises, according

to a well-disposed French critic, to rival that of any line in Europe or America, a view which must, however, be accepted with caution. But here again it must be remembered that the total is swelled by such items as Russian rails and girders employed when English or American could have been purchased at half the price—an outcome of the protectionist ideas favoured in Russia. Seeing, however, that Indian railways, in spite of their enormous initial cost, pay fairly well, there is every probability that the Siberian Railway will also eventually pay as a purely commercial speculation, notwithstanding the corruption and waste which are so prevalent at present. As a Government state measure, the success of the railway is of course already assured. Additional engines and trucks, ordered in hundreds, are yet insufficient to cope with the goods traffic on the sections of the line already opened. Under special exemption from the Imperial ukase which forbade the use of any but Russian rolling-stock and as a matter of special urgency, order after order has been placed abroad, principally in the United States and France. In 1898 it was estimated that expenditure for new rolling-stock on the western section alone would reach twenty million roubles. In the autumn of 1897, freight exceeded 490,000 tons—or double the amount anticipated in the most sanguine expectations. Of these, 320,000 tons were cereals for Russia. In spite of 600 new trucks and 1,600 wagons borrowed from other Russian lines, 70,000 truck-loads of grain and other produce could not be carried. The estimated freight for 1899 was 600,000 tons, and the goods traffic for that year was extremely heavy, the railway being hardly able to cope with it. The ordinary passenger trains, twice a day each way, were well filled. By 1901 it is expected to rise to 800,000, owing to the large immigration along the line and the rate at which land is being taken up. Opinions differ considerably as to the ultimate fate of these immigrants, the land on which they are settling being described by some as highly productive and by others being spoken of in very gloomy terms. But the fact remains that 200,000 immigrants arrived during 1897 and took up homesteads, and the same number in 1898; and this in addition to an ordinary passenger traffic of some 400,000.

Still more assured is the prosperity of the line as a great international undertaking. The saving in time would alone insure a large passenger traffic between Europe and the Far East, for, from the very outset, an average of sixteen miles an hour may confidently be expected—which, on the completion of the line, will land the traveller at Port Arthur within fifteen days of his departure from London—a journey at present occupying more than double that time. When the line has settled down into smooth working order and is more permanently ballasted, at least the same pace may be expected as is maintained on the ordinary American and Canadian trans-continental lines—*i.e.*, an average of twenty-five miles an hour. Indeed, when the heavier rails (twenty-four pounds) are laid, as much as thirty-three miles per hour is counted on by the railway authorities—a somewhat sanguine estimate. The journey from Paris to the Pacific coast will then occupy eleven days only, and that to Shanghai, at the most fifteen as compared with the present minimum of about one month and a half.

The Siberian Railway will proportionally shorten the journey to all places in the East which are north and east of Tongking, while the saving in money will be no less marked than the saving in time. At present a first-class fare by mail-steamer from London to Central China (say to Shanghai), costs just over £70, whereas the expenditure for the journey overland will amount to less than half this sum, made up as follows :—

	£ s. d.
Express from London to Russia	- - 7 0 0
Rail to Port Arthur	- - - 11 10 0
Cost of Meals, etc.	- - - 8 0 0
Steamer, Port Arthur to Shanghai	- - 6 0 0
 Total - - - -	 32 10 0

And when there is railway communication between Northern China and the Yangtze Valley, the above rate may possibly be still further reduced, if the Russian rates are not raised later on—a contingency which must be taken into account.

Many people, of course, who do not happen to be pressed for time, and who dread the exhausting strain of a fortnight's incessant railway travelling, will still prefer the sea route ; but there are large numbers to whom the Far East would for ever remain a closed book were there to be no means of approaching it but by sea, and to whom the attraction of a journey through such novel longitudes will to some extent no doubt neutralise any possible discomfort involved. The commencement of the journey is certainly anything but interesting, passing, as it does in the Akmolinsk province, through dreary, desolate regions inhabited by a sparse population of Kirghiz nomads, who maintain a precarious existence on the borders of the far-stretching "Hunger Steppes," where the very water—what there is of it—is salt, and where clouds of sand still blow over the regions where the ruins of many buried towns are to be found. After passing Omsk, however, a more flourishing country is traversed, of which the inhabitants are chiefly fishermen and trappers, but which will probably in time become an agricultural district. Indeed, the ever-varying character of the country to be seen throughout the province of Tomsk will alone probably reconcile the traveller to the overland route, and should this not suffice, there is the striking scenery round Lake Baikal and in Trans-Baikalia.

As regards the goods traffic : the present average freight per ton from Shanghai to London may be estimated at 32s. ; therefore, leaving out of the question the freight from Shanghai to a Siberian centre, it is evident that, in order to successfully compete with present charges, the railway freight must not exceed 32s.—i.e., half the actual rates charged on the cheapest lines in the world for such a distance ! It is practically certain, then, that no heavy through goods traffic from *Central China* is likely to be inaugurated ; though valuable and easily damaged articles like silk and tea, as also light goods and postal packets, would probably prove exceptions, and would be sent by rail.

In the Manchurian section of the line, only Russians and Chinese are allowed to become shareholders. The president, chosen by the Chinese Government, with the supposed mission of guarding Chinese interests, is happily described by a French writer as "un président chinois de parade"—in other words, a mere figure-head. A vice-president is, theoretically elected by the shareholders as the head of the executive, but his nomination is liable to the veto of the Russian Minister of Finance! The appointments of chief-engineer, constructor, heads of departments, and all engineers have similarly to be ratified by the Minister, and all plans and estimates have to be approved by him. In all other conditions the line is, as essentially as in the above, a Russian line. Gauge and speed are to be the same as on the Siberian line; tariffs are to correspond; mails must be franked; and all material is to be exempted from duty. On the other hand, to China is reserved, after thirty-six years from the opening of the line to traffic, the right to buy out the company—but only by paying every expense, every debt, every fraction of interest, or other liability incurred in the meantime—and what a bill that will be, prepared, too, by the hands of the Russian Government! Should this arrangement fall through, China is to enter into free possession after eighty years; but it requires no special gift of foresight to see to whom the railway—and not merely the railway—will belong before the expiration of this period—within the next few years, indeed!

Russian opinion on the subject is, as usual, more clearly indicated in deeds than in words, though even in words the Muscovite does not trouble to veil a brutal frankness. Practically, under the excuse of the necessity for protecting the railway, Russia has already overrun Manchuria with Cossacks, terrorising the inhabitants, securing railway land either "by purchase of pike and carronade," or at purely nominal rates, and adopting generally an attitude of *vae victis!* These high-handed proceedings must bring their own retribution, in insurrections and riots; but in the meantime they clearly show—and whoever runs may read—how Russians regard the probabilities of the railway reverting to China eighty years hence!

Regarding the natural difficulties of the Manchurian section—Manchuria consists, from the engineer's point of view, of the basins of the Sungari (a tributary of the Amur) and of the Liao River, which debouches at Newchwang. There is an intermediate zone of steppe, 125 miles broad, which is the continuation of the Desert of Gobi. The railway will have to traverse: (1) 364 miles of mountainous country, with several ascents to over 3,000 feet and an ultimate descent into the Argun valley (altitude 1,800 feet); (2) 130 miles of uninhabited, unexplored, mountainous country, where the line will again rise to over 3,000 feet; (3) 300 miles across the valley of the Sungari River; and (4) again up and down over the mountains at an average height of 2,000 feet, until finally the line descends to Nikolsk, 130 feet above sea-level. Here again the mountains are not the principal obstacle, which is encountered in the yielding character of the soil. The whole plain of the Sungari is reported to be in autumn one expanse of liquid mud—with, however, stratum of gravel at a depth of a few feet.

The Manchurian line alone is estimated to cost sixteen millions sterling, but, as hinted before, there is in its construction, as in that of the Siberian Railway, little question of expense or of economy, of easy country or shortness of route. It is, as has been said, above everything a political and military line, passing close to the Gulf of Pechihli, and from Port Arthur, when fully fortified, commanding Peking and the Gulf of Pechihli. Russia will be able, at her pleasure, to transport large bodies of troops to advantageous points on the neighbouring frontier, and to dominate Northern China, while she pushes southwards her railways, by means of which she intends to conquer China bit by bit. Although the acquisition of Port Arthur (now "Dalny") and Talienshan—unlooked for, so far as one may say *what* Russia does or does not look for, when the Siberian Railway was commenced—has necessitated the construction of a line of 530 miles or so to those ports, Vladivostok is not to be abandoned. That port is not only a growing commercial centre, but a safe harbour, and open throughout the year, now that the new ice-breaker can be effectively employed, and would be of great importance in the event of a war—for, instance, with Russia's neighbour, Japan. Since this paper was written two events have occurred of the greatest importance, the outbreak of serious disturbances in China involving the intervention of the Powers, and the acquisition of Masampo, which bears a sinister resemblance to the Port Arthur incident, and gives the Russians if unchecked, a complete command of the Japan as well as the inner China seas.

Although not properly pertaining to the Trans-Siberian-Manchurian Railway, it is necessary here to specially note the three alternative plans for a great line in Central Asia, to be built after the completion of the Trans-Siberian, with which it is to be linked, thus joining the two great systems, the Trans-Siberian and the Trans-Caspian. These are: (1) by a line from Tashkent through Aluata, Vernoë, Semipalatinsk, Sergiopol to Barnaoul and Polotentse on the Siberian Railway, 2,100 miles; (2) from Orenburg *via* Turkistan town to Tashkent, 1,800 miles; and (3) from Saratov across the Uralsk steppes south of Lake Aral to Khiva-Charjui. The first is probably the line that will be constructed, as Prince Hilkoff (the Minister for Ways and Communications) is strongly in its favour, and as it will pass near important Crown coal and mineral mines at Barnaoul.

The fact to be always kept in mind with regard to this great Russian railway is, then, that it is a strategic line, which has been carried out at high pressure, from start to finish, expense being disregarded as an unimportant item when compared with the results aimed at, one of the most noteworthy features in its construction being the vast number of sidings built, in order that the single main line may be always kept open in case of emergency. The importance of a line such as this, which will pass right through from St. Petersburg to Port Arthur, being joined later by a branch from the Trans-Caspian system, is obvious.

The commercial future of Siberia cannot be regarded as difficult to foretell. All authorities agree as to the vast riches of the country,

which, although at present chiefly potential, are in no wise chimerical. Siberia could, without doubt, achieve high commercial status as a corn-growing country alone, or as a cattle-raising land. Or, again, she might rely on her vast wealth in timber, on which future generations, in view of the rapid exhaustion of forest in other quarters of the globe, will be compelled to draw. As a gold-producing region Siberia, in spite of ridiculously antiquated and ineffective methods, already holds the fourth place in the world's production, while her stores of iron, coal, and copper would prove a no less valid title to a high place in the world's market. Any one of these resources would suffice—and Siberia possesses them all. The treasury is there, and but awaits the golden key.

This key is Good Communications. These cover all obstacles to Siberian progress that have ever been adduced—difficulties of transport, prohibitive wages, unscientific methods, deficient capital and organisation, official maladministration. With the iron road awakening the echoes of the vast tracks of solemn forest where, three centuries ago, the Tunguz and Buriat might only note the cries of animals scarcely wilder than themselves; and bridging rivers where, till yesterday, the fisherman's birch-bark canoe alone glided through the solitary reaches, Siberia will be, indeed, conquered, and, with a steel yoke about her neck, compelled to yield her all: of grain and cattle, furs, fish, and timber; porphyry and gold; coal, lead, and mercury; silver, copper, and iron—all the wealth she has, under guard of eternal snow and ice, so long held in trust for future centuries.

Nor, once opened up to free intercourse with the civilised world, will Siberia gain advantages merely of an economic order. Intimate relations with thinking, energetic, and progressive humanity will supply the boorish moujik and the arbitrary official with an education that no mere Government schools can offer him. The method of Siberian exile, even now under process of amelioration, will be revolutionised slowly but surely, and the present crude and antiquated system will be swept away by the vivifying current from the swift streams of the outer world, and the complete transformation of the country will be effected through the moral elevation of its inhabitants.

The political future of Siberia requires no more profound power of prophetic judgment. She must benefit more and more, together with European Russia, by her position on the future world's route to the East. Whatever the eventual destinies of China, Siberia cannot but profit by close neighbourhood to the last and greatest virgin market now remaining to the world, and by the commanding position now held by Russia on the Pacific. No graft, but an actual growth of Russia, Siberia has a continental solidity which should enable her to defy all attack. There seems now no likelihood that she may prove to have outgrown her strength, and that she may split up from sheer bulk, that the Eastern (Mongolian) Siberia may throw off allegiance to the Slav. Those who hold this theory and speak of the possibility of a Siberian Republic, do not appreciate the power of the iron road to Russianise Siberia, and have small conception of the absolute solidarity that welds all Russians, from autocrat to moujik.

Thus is Russia entering into possession in Asia, developing strength on strength in her own territories, and paralysing the vital centres of the neighbouring Chinese Empire, which her "destiny" will later on force her to absorb. Under the cloak of legitimate effort, she has again secured the world's approval, and has retained it until the matter had gone too far for other Powers to do anything but review another "stricken field."

The CHAIRMAN (Sir Lepel H. Griffin, K.C.S.I.) :—Before inviting experts, some of whom I see present, to address you on the subject of the lecture which we have just heard, I would venture to make a few remarks as Chairman, with all modesty, as this is not a subject which I have at all taken as my own. I think we all appreciate the excellence, the moderation, and the information which have inspired Mr. Colquhoun's very valuable paper, and I would like to express my belief that there is no subject in the world to-day, not even including South Africa, which is of more vital importance to England than the right determination of the great question of the Far East. This question has been dealt with very exhaustively by many writers, but I would like to invite attention to two articles of great interest, and which some gentlemen here may not have seen, in the *North American Review*, one of the best reviews in the world, for last month, one on this very question which has been so ably treated by Mr. Colquhoun—the Siberian Railway, and another on the relations between Japan and Russia. I would further like to call particular attention to a striking and suggestive article in the *Times* of to-day on the Russo-Japanese rivalry in the Far East. With regard to the lecture, I would say that the two questions of the commercial and the political value of the Trans-Siberian Railway are altogether apart. Everyone who is interested in the progress of the world must rejoice that Russia is at last going to open to civilisation that vast territory of Siberia, which has hitherto been a *terra incognita*. Everyone will wish her well in that attempt, and I have no doubt of her eventual success, and the development of that great territory will influence very largely the future fortunes of the world. As to the influence on international trade of the Siberian Railway it is impossible at present to speak with any certainty. We must wait and see what policy Russia will adopt. We all know that her policy hitherto has been by hostile tariffs, by differentiation against all other nations, to keep off her roads any traffic which is not her own. If this is to be her policy in the future, trade certainly will not be attracted to the Trans-Siberian Railway, nor do I believe that for many years to come the railway will very materially influence or diminish the sea-borne traffic of the East. Nor for myself—and I have been a great traveller in my time—would fifteen or even thirteen days' jolting over the deserts of Central Asia be at all a pleasant experience or recollection; I would very much prefer an extra week or fortnight in a P. and O. steamer. However, everyone to his taste, and if people choose the Siberian route they must expect a certain amount of fatigue and discomfort. But I do not look upon the Trans-Siberian Railway as so important from the international point of view as it is for the industrial and commercial development of Siberia itself. As to the strategical point, it is impossible in such an Institution as this, to be altogether silent. To-day you see the position. There is no hostility on the part of England towards Russia though there is both dislike and suspicion of her political methods; and the pretended hostility of Russia towards England which is so conspicuous in the St. Petersburg and Moscow papers, especially with reference to the South African war, and the threats of pretended movements on Persia and Afghanistan, have been in my opinion, little more than attempts to persuade England not to interfere in certain movements which Russia is now making, primarily directed not against England but against Japan. It is for Japan to consider the question and it is for her to find the key to the problem. Russia has virtually annexed the important Port of Masampo at the very apex of the Corean peninsula, and with Port Arthur on the one side and Vladivostok on

the other completely dominates Corea. Japan is a small and a poor agricultural country with a population of about 40,000,000. She will not be able to subsist unless she has some power of expansion, and the new acquisition of Formosa is not suitable for colonisation. Corea is her natural outlet. If Corea is taken by Russia, as it promises to be and as it undoubtedly will be unless some active opposition is offered, Japan will receive what I consider to be a serious if not a fatal injury. Consequently to-day you see Japan and Russia face to face in the East, and the disturbances in Northern China are really no more than symptoms of this particular complaint. That is all I would say on that point. You have heard from Mr. Colquhoun with what feverish anxiety Russia is now striving to complete the Siberian Railway and to fortify Port Arthur. At the present moment no less than 90,000 coolies are employed on the works about this harbour. If you will read the article I have mentioned to you in the *Times* of this morning you will appreciate the enormous efforts which are being made on every side to complete the railway and to make Port Arthur the most formidable fortress in the East. Before we are very much older, gentlemen, strange events will happen. I congratulate this illustrious Institution on the fact that before they occur our troubles in South Africa will probably be at an end, and England, stronger than ever, will be able, if she chooses, to take her fair share in the settlement of the Far East.

Captain ERNEST BARNES (Indian Staff Corps):—I should like to make a few remarks to emphasise the importance of this subject. Last December on the Siberian Railway I was able to travel from Moscow to Baikal and back, a distance of over 6,000 miles, in the short space of four weeks, and at the same time I had two or three days to spare for each of the big towns, viz., Omsk, Tomsk, Krasnoiarsk, and Irkutsk which lie along the railway. The Irkutsk-Baikal section was at that time only just open to traffic, so that the rolling stock for goods and passengers was identical, but as far as Irkutsk the train ran through from Moscow, and was a real *train de luxe*, replete with every luxury it is possible to have, and every comfort. I only mention this personal incident in order to show the ease and certainty with which a private individual, unassisted by official introductions, can now travel in Siberia. In addition to the special weekly service, two passenger trains run daily from Cheliabinsk at the Russian end of the line to Irkutsk, one the postal train of first, second, and third class, and one a mixed train for second, third, and fourth class passengers, with goods wagons; and a Russian merchant at Omsk informed me that in the busy season the goods traffic is so great that already the railway cannot cope with it, and it is contemplated, as soon as funds permit, to double the Omsk-Cheliabinsk section of the line. With regard to the alignment of the railway from Irkutsk to Baikal, I may say that at present the Irkutsk-Baikal section ends at the point where the River Angara leaves the lake, and thence the alignment is carried hugging the southern end of the lake in the direction shown on the map. But I was informed by a Russian engineer that this is regarded as temporary, and that without doubt the final alignment will be from some point probably west of Irkutsk, which will either join the main line beyond Baikal, or more probably in the future as Mr. Colquhoun has said, they will have a line straight to Pekin via Kiakhta. I may also give an instance of the way in which the line is acting on Siberia itself in the way of the development of the country. A few years ago there was literally no centre of population at Obi, the present terminal station of the western section of the line, but since the railway has been opened a town has sprung up called Novo-Nikolaevsk, after the present Tsar, which already has a population of 15,000 inhabitants. As to the commercial side of the question, southward from Omsk, the valley of the Irtish is extremely fertile. The districts of Bisk and Barnaoul, as grain-producing country, are probably unsurpassed in the world. North of Krasnoiarsk there is a large area of auriferous deposit, and again east of Baikal there are great mineral deposits of different kinds. As Mr. Colquhoun has said, "the treasury is there, and but awaits

the golden key." I think the golden key may be also taken to mean capital. Siberia has already her communications, with a railway direct from Moscow to Stretensk already open, and with rivers and steamboat communications and railway from Stretensk to Vladivostok; but it is capital which is needed to develop the internal resources of the country, and here, I believe, there is a chance for English merchants. It is not that the Russian merchant has no capital; it is that he objects to use his capital in any undertaking of which he is not sure, and this fact may be verified any day in Russia, where it is seen that for the most part industrial enterprise is in the hands of foreigners. We may hope perhaps that soon there will be commercial agents of our Government in that country, so that the possibilities of the country may be known, and so that we may enjoy some of the fruits of the golden harvest which may be reaped in Siberia. I believe at the present time there are not two English merchants to be found in the whole length and breadth of the country. As to the political aspect of the question, the whole of Northern Manchuria may be said to be almost a Russian preserve already. Russian officers returning from Port Arthur, whether on leave or duty, as a matter of course travel from Pekin overland to Kiakhta by carriage "dak," the horses for which are supplied by the Chinese officials on a warrant from the Russian Consul-General at Pekin. Needless to say, this conveyance is not open to the ordinary traveller; but once the railway has been opened to Port Arthur and consequently to Pekin, and the Russian grip is finally closed over the whole of Northern China, there is no doubt that foreigners will be given every facility to use the railway, and that Russia will stand forth as the great pioneer of civilisation in the East. It may not be generally known that at the Paris Exhibition there is a complete *train de luxe*, which is exhibited by the International Sleeping Car Company, which has been specially built for the Moscow-Pekin service. At the Exhibition you can take a ticket from Moscow to Pekin at a model Russian station; you sit in a drawing-room car, the whole panorama of the Siberian Railway passes before you, and you alight at the Pekin terminus with Chinese ticket-collectors, and porters to show you the way out. So you see the illusion is complete. As Mr. Colquhoun has said, it is idle to suppose that China will ever be in a position to exercise her treaty rights, or obtain control over the railway which Russia is now building through Manchuria at such great pecuniary sacrifice. Many of us believe that Russia will be our rival in the future to an extent which perhaps other countries cannot be, and it is well that we should understand the importance of this undertaking on which she is working with such unwavering energy, for indeed it bids fair to reduce our influence in Pekin to practically nothing, where until recently we were almost admittedly supreme.

Major E. ST. C. PEMBERTON, R.E.:—It may be interesting to some in this room to hear a few remarks from one who has twice visited Siberia: the first occasion was in 1891, nine years ago, at the time of the Anglo-Russian Syndicate—a trading company which was formed in this country with a view to opening up the sea route to Siberia by the North Cape and Kara Sea, the practicability of which had been shown by the successful voyage made by Captain Wiggins to the mouth of the Yenisei River with a cargo of British goods in 1890. The goods were then taken up the river several hundred miles to the town of Yeniseisk, where the Syndicate established its dépôt and distributing centre. At that time there existed in commercial circles in England a desire to open up trade relations with Siberia, and the project received the warm support of H.M.'s Ambassador at St. Petersburg, the late Sir Robert Morier, and also considerable encouragement from the Russian Government—the goods introduced into Siberia by the Kara Sea route being exempted during a term of years from the payment of import duty. The Anglo-Russian Syndicate has, I believe, ceased to exist, and I only mention it in this place, because one cause of its non-success lay in a condition of things, which is germane to the subject under discussion in this theatre to-day. I refer to the means

of transportation throughout the country. Its operations were hampered materially by the absence of effective and speedy means of transportation, such as would at the present time be afforded by the railway line now under construction. The means of water communication throughout Siberia are, generally speaking, good, but by reason of the icebound nature of the country in winter they are only available for trading purposes during the short Siberian summer. Well in 1891 there was no railway, and the distribution of goods from Yeniseisk took place mostly in the winter season on sledges ; nevertheless, immense difficulties were experienced in the transport of such ponderous plant as mining machinery and ironwork, which formed no small proportion of the goods imported from England. I was in no way connected with the Anglo-Russian Syndicate, though, as an English traveller spending some few weeks in Yeniseisk, naturally interested in the enterprising venture of my fellow countrymen. My mention of the difficulties encountered by the syndicate is made as an illustration of the disabilities under which trade suffers in a country not possessing proper internal communications, and as an indication of the great change that will now be produced in the condition of Siberia by the line of railway traversing it through its entire length. But to return to the immediate subject of discussion. As the lecturer has so ably pointed out, the trade potentialities in Siberia are great indeed. The mineral deposits are immense—gold, silver, lead, iron, and graphite all being found in large quantities. Siberia is already one of the great gold-producing countries of the world ; hitherto this gold has been obtained from the process of washing alluvial deposits, but with the advent of the railway come the means of transportation of heavy quartz-crushing machinery, and the introduction of such will lead to a probable development of the gold-mining industry of the country, and to an increase in the amount of the annual output of the precious metal. The country generally will be opened up in an extraordinary way by the railway ; of this there can be no doubt, and it behoves us as a nation to look ahead and consider what the situation political, military, and commercial, created by the construction of this great line, will be some few years hence. It will be one to give Englishmen pause. What is the effort which Russia has made indication of ? I think there can be but one reply—immense energy and vitality ! To have built the longest line of railway in the world in so unprecedentedly short a time is a feat that any nation might be proud of, and yet we consider that commercial enterprise is not a feature of the Russian people. Political enterprise we know they possess in a high degree, but in the sphere of commerce many among us deem them to be slow and to lack the spirit of enterprise. There may have been much truth in this judgment in the past, and I believe it to be still the case, that the Russian merchant is averse to risking his money in speculative ventures. But this, after all, is in the natural order of things ; the Russians are not a seafaring people ; they have not enjoyed the advantage which has accrued to us by reason of our being by necessity a seafaring race. The spirit of enterprise of our people has been stimulated throughout centuries by the voyages of our merchant-ships on venturous trading expeditions to all quarters of the globe, and it may be remarked that it is, in a great measure, to the spirit of enterprise thus long fostered in us that we owe the commercial predominance of the world, which we possessed up till recently. But the Russian merchant will move. Do not think contemptuously of him or of any class in that country. As a people the Russians have immense vitality and an immeasurable belief in themselves. The feeling of nationality amongst them is as strong of its kind as I have found to be possessed by any race in the world, and my experience of the Russians is the result of eight visits to their country and of a knowledge of their language and literature. I confess to an immense respect for the capacity of the Slavonic race. Now, if we English have to reckon with any people in the world, it is with the Russians, and my advice is, do not let us quarrel with them. By all means let us hold our own, but do not let us quarrel with them unnecessarily. Why should we ? They are making for civilisation, in a different way, perhaps,

from that in which we are ourselves ; but still they are making for civilisation, especially in China, and so long as they make for civilisation without making too much on their own account, we must be content.

The CHAIRMAN :—Quite so.

Major PEMBERTON :—Now, with regard to the line of railway, which it is proposed should be constructed from the Siberian frontier town of Kiakhta, which is situated to the south of Lake Baikal, across the Gobi Desert in Mongolia to Pekin, I may at once say that there is every probability of this line being put in hand before many years elapse. The Gobi Desert route by Urga has for many years been the regular caravan route connecting China with Russia in Europe *via* Lake Baikal and Western Siberia ; the small town of Kiakhta owes its importance to the China tea trade ; being the door through which the tea enters the Russian Empire. Events march quickly nowadays, and it may be regarded as not improbable that within ten years this projected railway across Mongolia will be in course of construction, if not actually built. It would bring Pekin within twelve days of London, and though when in Kiakhta in 1891 I was unable owing to lack of time to cross Mongolia to Pekin, I made many enquiries about this caravan route, and from what I then gathered I should be inclined to think that the physical difficulties in the way of the construction of this railway would not be very great. It appears to me a matter for regret that this Institution has not been able to supply us with a better map to-day, so that a more comprehensive view of Central Asia might have been presented to the audience ; because in connection with this railway we shall find other railways built. The line from Omsk, the seat of Government in Western Siberia, will doubtless in a few years be carried on up the valley of the Irtysh to the town of Semipalatinsk, for so long the Russian outpost in Central Asia, and will here be joined by the northern extension from Tashkent of the existing Trans-Caspian Railway. By the ironroad will Russia tighten her grip on these vast regions of Central Asia. There are only one or two things, which the lecturer has said, that I do not quite agree with. With regard to the Russianising of Siberia, he appears hardly to be speaking quite to the book. Siberia can hardly be said to require any Russianising. It is thoroughly Russian and a homogeneous people. The same dialect takes you from St. Petersburg to Vladivostok. The telegraph has been in working order for many years past from all parts of European Russia to the Pacific. Again, the vast possessions of Russia in Asia are administered by officials appointed by the Tsar. The local Governments being in close touch with and under the direct control of the supreme Government in St. Petersburg. The official class in Siberia is not distinct from, but practically identical with, that in Russia in Europe, and has practically the same education, training, and traditions ; the bureaucracy of the two portions of the Empire forms indeed one service in a far greater degree than do the members of the two civil services, who are responsible for the administration of the United Kingdom and British India. Another misapprehension, which appears to exist in this country is that Siberia is a gloomy and dreary spot with none but sad associations, where such things as joy and merriment are unknown. Now, this is very far from being the case, which is, indeed, demonstrated by the fact that many middle-class Russians prefer Siberia as a place of residence—for there they enjoy a freer, more open life, and greater liberty of thought and speech in regard to public questions and political affairs. Siberia is by no means the dreary country it is pictured to be ; in it, and in intercourse with its inhabitants, may be found much that makes life pleasant, and much which makes for freedom and easy circumstances. Here, as in all new countries, the struggle for existence has not yet become so acute as it is among older communities, and that in itself is surely no small advantage.

Mr. SPENSER WILKINSON :—I wish to say a few words, not by way of imparting information, because I have not been in Russia or Siberia or in the

Far East, but rather in the way of putting a note of interrogation. The impression which the paper leaves on one's mind is that the completion of the Siberian Railway will give Russia some magic and irresistible power with regard to the Far East. Mr. Colquhoun has used one or two expressions which seemed to me to attach, not an exaggerated importance to the value of the railway for Siberian purposes, but perhaps an exaggeration of the power which it will confer upon Russia in matters political and strategic. I see that he speaks of it as a means of bringing the vast Empire of China for the first time into intimate touch with Europe. The query which I should like to put to Mr. Colquhoun and to any other experts who are present is whether it is not the case that as a means of transport, either for commercial or for strategical purposes, the sea route which the Western Powers of Europe have always used will not long remain incomparably more effective than the very long and imperfectly built line of railway which Mr. Colquhoun has so admirably described to us? I am emboldened to ask this question, Sir, because I suspect from your remarks that you share the doubt which I am trying to put a little more strongly. At the present moment, when the political and strategical aspects of the situation in the Far East interest us so much, it is perhaps as well that we should realise that there are two sides of the question with regard to transport to the Far East. We know that Russia is labouring to complete this railway, as to the transporting power of which, after hearing Mr. Colquhoun's paper I feel inclined to be more doubtful than I was before I heard the paper, when I see the details as to the way in which the railway has been made, and when we know that it must take a very long time and a great expenditure to increase its transporting power. We know it is a single line, and although a second line can be comparatively quickly laid, still it would be a very considerable enterprise to lay the second line of rails across that immense distance. In the meantime, it seems to me that the British at least have been in comparatively intimate intercourse with China for many years by the old-fashioned route of the sea, which is still at our disposal, and which it appears to me will be for a very long time to come an incomparably more powerful instrument for transporting purposes than any railway can be. I have expressed that dogmatically, but I really ask it as a question. I think it would help us if some staff officer who has had experience of the transport of troops by rail would give us some idea as to whether it is possible by that long railway to do anything which is comparable to what is possible by sea. We have seen in recent months what can be done by sea in the way of transport of troops. We have seen over 150,000 men taken to South Africa, which I think is a longer distance than the whole length of the Siberian Railway, and although, perhaps, at first sight it might appear that the railway could have done it more quickly, I doubt whether a railway expert would tell us that it would be possible with a railway to move the same number of troops, the same distance, in the same time, by a single line of railway. Then, again, we must remember that probably the transport of those troops would have been effected in much quicker time had it been undertaken as part of an original plan worked out with the previous intention of sending that number of troops to South Africa, whereas we know that the intention to send so large a force was one which only grew gradually. Therefore the whole matter was not one of a worked-out scheme, as we might assume would be the case in the transport of large bodies of troops across the Siberian Railway. Secondly, with regard to the commercial importance of the railway, though I believe everyone recognises the very great advantage to Russia, and perhaps to some extent to the rest of the world, which will accrue from the possibility of rapid travelling, I would again ask the experts who are acquainted with the commercial possibilities both of railway and of sea transport, to tell us whether the railway can possibly do anything to rival what can be done by the maritime Powers using the open sea. I thought before I rose that it may sometimes be useful to have a certain amount of scepticism as regards the affirmations of a valuable lecture like that we have just

heard. I may say the lecture rather made upon my mind the impression that the Trans-Siberian Railway was a long snake which had somewhat fascinated Mr. Colquhoun and made him imagine there was no power of competing with it ; and it would be a relief to my mind to hear some person competent to speak on the question of transport both of large masses of goods and of large masses of troops, give an opinion as to what may be done by the competitive route—the ocean.

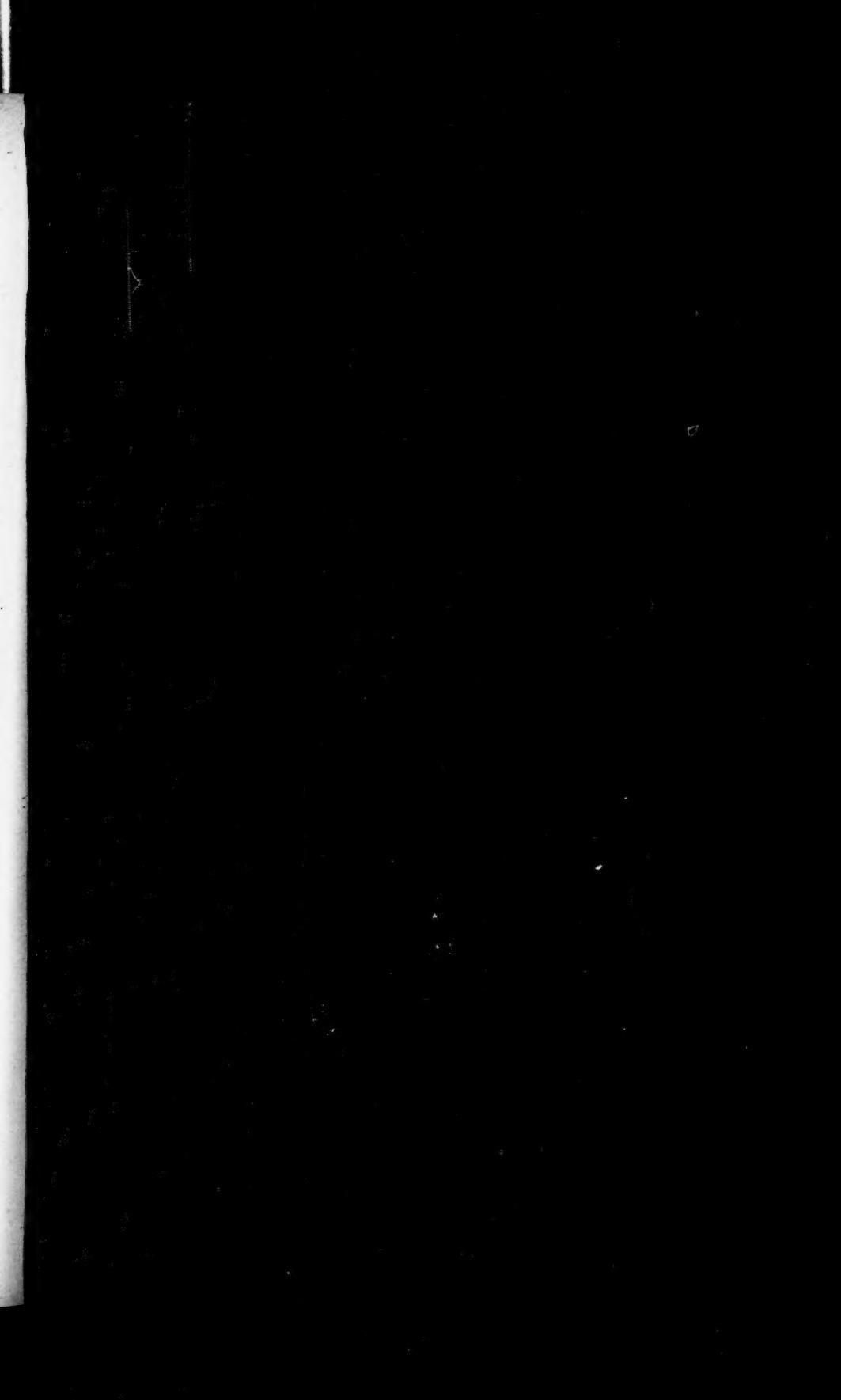
The CHAIRMAN :—Before I ask Mr. Colquhoun to reply, it would be a matter of great interest to this meeting if any staff officer or naval officer who is competent to speak could answer authoritatively this question which Mr. Spenser Wilkinson has so strongly put. It is one of the greatest interest, I think. I confess I share his views very largely.

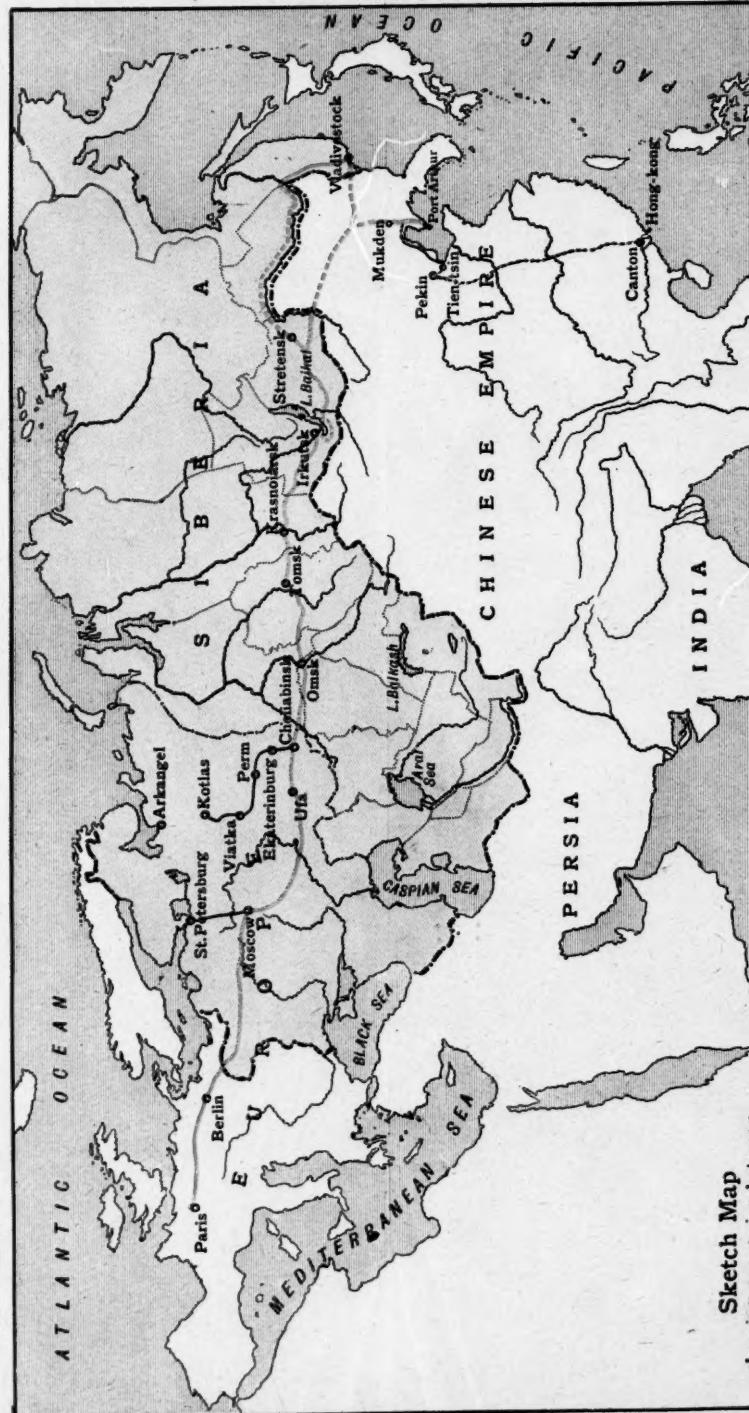
Mr. ROBERT MONEY, C.E. :—With regard to the strategic nature of this line, it may interest those present to hear that two years ago when surveying the extension of the Siberian Railway to St. Petersburg, I received a specification upon which to work. This was, I believe, the original specification of the Siberian Railway, and called for a line which would allow the passage of three military trains each way in the twenty-four hours. Our orders were to lay out the stations so that *seven* military trains could be run each way. Several of our men met regiment after regiment of Russian soldiers being marched to Siberia, and about the same time we received orders to provide for nineteen military trains each way in the twenty-four hours. That, I presume, is what they consider the traffic capacity of the Siberian Railway so long as it is a single line. If the traffic should require a greater number of trains it will probably be found necessary to double the line.

Mr. A. R. COLQUHOUN, in reply, said:—I will be very brief indeed. In replying to the remarks which have been made upon my paper this afternoon, several points of the very greatest importance have been raised, and the most important of all are those which have been put by my friend Mr. Spenser Wilkinson. It is not an easy matter within the limited time at my disposal to traverse the ground which I should like to; but I will endeavour in a very few words to answer the questions so far as I can. Mr. Wilkinson's questions might be resolved broadly into two, namely, as to the strategic and the commercial value of this great undertaking. It is an immense subject to deal with; but I would merely say this, that I cannot conceive anyone who has his eyes open travelling over that railway as I did, coming away from an examination of this project and not feeling that an immense change was going to be wrought by this great work, both strategically and commercially. In my paper I laid stress on the fact that primarily I believe this railway is a strategic one—a political one. I believe that the commercial side of the question was to the Russian Government entirely supplementary. Perhaps I did not define with sufficient distinctness what I meant by bringing the whole Empire of China into direct and intimate touch with Europe. I meant that it would be bringing the Empire of China, with its 400,000,000 of people, into direct, living touch with European Russia, and therefore with Europe, which, of course, is a very different thing from the relations which Europe, and Great Britain, as the greatest sea Power of Europe, has hitherto had with it, seeing the immense distance which had to be traversed over sea. What the value of the over-sea route for strategical purposes is going to be when it comes into conflict with the overland communication now established by Russia it is impossible exactly to foresee; but there is one point in connection with this question that I would draw your attention to: that whether this land communication is going to give Russia the power which I believe it will, and which I have indicated in my paper, or whether it does not, we have to bear in mind—and this country seems to take singularly little note of the fact—that Russia, the greatest military Power the world knows, is turning herself with feverish energy into a great sea Power; while Britain, whose prestige hitherto has rested almost

entirely upon her sea strength, has done very little indeed to augment her strength as a military Power. That is a point to which I would suggest attention might usefully be given. The old sea route on which England has had to rely is, of course, not going to be displaced by this land communication, and its value has been demonstrated by various writers, and in a most admirable way by Mr. Spenser Wilkinson himself. Excepting Mahan, I do not suppose there is a man bearing an English name who has done more to teach his country what the value of sea power really is. But I wish to raise another point in connection with this question. While on my return from an examination of this railway, with my knowledge of the Far East and of these Asiatic countries, I looked with grave misgivings on this advance of Russia, which is now going on unchecked from year to year, I do not for one moment subscribe to the proposition which seems to find so many adherents in this country that Russia is altogether impregnable. In my opinion, in the heart of Central Asia, in European Russia, and in the heart of Siberia, a land-locked Empire, a military Power like Russia is impregnable; but if she chooses to come down and give hostages to fortune—if she comes down to Port Arthur on the China Sea, and, as she intends to do, to the Persian Gulf and the Indian Ocean—surely Englishmen are not going to be so un-English as to say that then Russia will be impregnable. On the contrary, I say that every time she comes down to the seaboard as she has recently been doing, and as she intends to do, she is making herself, at least at those points, weaker. As regards the commercial value of this railway, there are no figures upon which one can build up an argument; but, whether this railway is going to be remunerative or not, I would remind you that in the early days of the American Trans-Continental lines, not exactly this question, but a very similar one was raised—as to whether those immense railways could ever pay. At that time the greater portion of public opinion agreed that they could never hope to carry a traffic which would make them remunerative. Yet we know that not one, but some seven or eight or even more Trans-Continental lines have been built, and we know what enormous traffic they carry, and what immense revenues they earn. There are two or three other points I should like to say one word about. You know that at present there are serious disturbances occurring in China. Most ominous events have occurred in the last few years. Russia has come down across the whole of the immense tract of Siberia, and has also made the magnificent country of Manchuria—the "Garden of Russia," as it is called—a Russian province, and has secured there 7,000,000 of the finest inhabitants of the Far East, who have become Russians, while she has turned Port Arthur into one of the strongest fortresses the world has known. Since this has occurred, disturbances have come to a head in China within the last few days, and what do we see happening there? We find what, of course, was anticipated by everyone who knew anything about that part of the world—that the Chinese Government are actually taking it into consideration to invite the Russians to come down into China and restore order. Everyone who knows anything of the history of China, who knows anything about past history elsewhere, knows what "restoring order" in a country like China must mean. Locally we know what the restoration of order meant with regard to Manchus, who now are the ruling dynasty at Pekin. We know how they came down, and never went away again; and we know, not to go so far abroad—in Spain, for instance—how the Moors who were invited into Spain to restore order refused to go. I suggest to you that the Russians are now going to preserve order at Pekin, and once established there, they will never be turned out. A point of importance—a most vital point, and one which seems to have been almost unnoticed here—is the question of the open door in China. Major Pemberton alluded to the good side of the Russian occupation of these territories; and I myself am willing to admit that wherever the Russians go in the countries of Central Asia they replace what they find there by something better. But I do not at all admit that

that something better is as good as anything in this world can be. In coming down into China—this enormous hive of 400,000,000 people—we have not only to recollect what the Russians have done inside their own Russianised territories, but we have to consider what they are likely to do in a country like China. You know the old story of the open door, of the negotiations which have been going on for the last few years about this question, and how eventually, after all sorts of efforts had been made in this country and the United States, the United States Government asked the various Powers whether they would subscribe to this system of the open door; and with what result? Our Government has seemingly accepted the Russian assurance—accepted it as if it were perfectly satisfactory. But what is the real meaning of this assurance? It means absolutely nothing. In fact, it means that the Russians have explicitly given the United States Government to understand—if they choose to read the correspondence aright—that there shall be no open door in China. That is as explicit as anything in this world can be; and yet I have only seen one reference to it—only one exposition of the whole of this question in the English press or in the reviews, and that is an article by Mr. Robert Yerburgh, M.P., on what he calls "Muravieff's Triumph" in the *National Review* of last month, which is perfectly unanswerable. In conclusion, I may be permitted to say that, as you all know, through a series of administrations, for many years past, this country failed to stand on certain questions where it should have stood—I refer particularly to questions like Egypt, Siam, the West Coast of Africa, and South Africa. You also know that within the last few years the country at last plucked up spirit and stiffened its backbone enough to make a stand. And with what result? With the result that Egypt has been disposed of, the West African question has been dealt with; we had Fashoda, that was wiped off the slate; and now we have the South African question within sight of a satisfactory termination. The lesson to be learnt from all this I beg you to take into consideration. It is this: If this country is going to stand in Asia, will there ever be a better opportunity for standing than now, when the country has been triumphant in South Africa, and when at last they have created an Army?





**Sketch Map  
showing connexion between  
Atlantic and Pacific.**

— Line constructed.  
— Line under construction.

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VOL. XLIV.

PLATE 9.





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## THE QUESTION OF THE TYPE OF BATTLE-SHIPS AND CRUISERS MOST SUITED FOR THE RUSSIAN FLEET.

(From the "Morskoi Sbornik," under the signature "E. D., June, 1900.)

Translated by Captain E. RASON, R.N.

IN journals and gazettes one often reads recommendations to build such and such a type of battle-ship or cruiser, whilst the general consideration as to what type of battle-ship is necessary to us, and whether we can change the present types into one universal type, cannot be decided, in my opinion, until we have considered the boundaries of the Empire, and in agreement with them the required fleet and armaments.

Therefore, I consider, first, our frontier, and then it appears to me that we can see where and in what place we want a coast-defence fleet, where only cruisers are required, where ships of different types and sea-going battle-ships are necessary, and establish with the requirements of the place the action to be taken; then only can we define the establishments required for these squadrons. After this it is possible to consider what conditions each type must satisfy, and then it will be seen how far it is possible to establish a universal type of ship, that is, one which will satisfy all requirements.

*Naval Bases.*—We have, at present, few of them, and they are so distant one from another, that each of these places must be looked upon as a separate unit, a self-supporting base, and so isolated that no one base will be able to afford support to another base, during war-time, or even shortly before war begins.

1. Our north coast, although it is open to navigation for the whole year, and we have found a suitable port open all the winter, still, in consequence of the inhospitable climate and its being so far from the seat of possible war operations, cannot afford a thoroughly good base for a large fleet, but is only suitable as a base for secondary operations, *i.e.*, for cruisers, which, besides destroying the enemy's commerce, can damage or blockade secondary bases or colonies of the enemy. For the appointed aim it is not necessary to have in the north sea-going ironclads, but it is sufficient to have good cruisers, which, in order to be entirely independent in their action, must have the following properties of size, speed, supply of coal, and armament.

In order to be independent, a cruiser must have a displacement of not less than from 10,000 to 12,000 tons; only under these conditions can it be suitably armoured, which is absolutely necessary in case of having

to fight an enemy's cruiser, or have a sufficiently steady platform, or possess the invaluable quality of arriving in time in all operations. If, for economy's sake, the size of the cruisers is reduced, it will cause undesired results during war-time. They will not arrive in time at the given place, or, what is still worse, but possible, the meeting of three small cruisers (of between 5,000 and 6,000 tons) with an enemy's large cruiser in fresh weather would give an advantage to the large cruiser over the smaller ones. The large cruiser would take advantage of superior speed and heavier artillery, would not be washed down by the seas, and would have a steadier platform. The small cruisers, rolling heavily, would not be able to give a suitable reply to the large cruiser. This would give the large cruiser the possibility to use its power, to place the smaller cruisers in the worst position, and to destroy each in turn, not even expecting to meet with serious loss in so doing.

A squadron of such large self-contained armoured cruisers might blockade the most important colonies of the enemy, would be the means of keeping near these colonies a sufficiently large enemy's fleet, which would thus be kept from assisting at the main seat of operations, where, thanks to this action, the enemy would not be able to concentrate all his force. The movement of troops by sea during the presence at sea of these cruisers would be very dangerous, and to destroy these squadrons of cruisers with their high speed and large radius of action, which must not be less than 25,000 miles, would be almost impossible. If they engaged in an action, it would only be with smaller cruisers, or, if it were with cruisers as large as themselves, it would only be when they were in numerical superiority.

2. The second naval base on our coasts is the Gulf of Finland and the Baltic Sea. In view of their closed condition they may, taking everything into consideration, not require an active fleet, but may be protected by coast-defence fleet, and we will now consider of what ships a coast-defence fleet should be composed.

First, they would be armoured coast-defence ships of shallow draught, of good turning powers, and, in place of large coal stowage and stability, will be more heavily armoured and have greater gun power than a sea-going battle-ship of corresponding displacement would have. But the construction of such ships and the up-keep of them, only for defence purposes, is too costly, and would not be in the power of the finances of the Government, in view of the large Army we are bound to maintain; besides which, in order that these ships should have any meaning, there must be enough for one, or even two, squadrons, if they are to act against foreign battle-ships. At present, according to my opinion, such a fleet would only uselessly increase the expenses of the Government, and their place might be taken by a torpedo flotilla, the expense of which would be considerably less and whose use would be quite as great. One may openly say that with a large number of such vessels no nation would risk its vessels by operating in the Baltic, and consequently the shores of that sea would be sufficiently protected from landings in force by the enemy.

It will only be necessary to distribute squadrons of torpedo-boats and torpedo gun-vessels on that coast (Gulf of Finland and the Baltic) where the necessary stations have been prepared for these vessels to anchor and repair in. Places of the above-mentioned description are so numerous that it is not worth while to enumerate them.

To destroy such a swarm of vessels would be impossible, and their presence would do away with any thought of landing an expeditionary force; there would be too much risk of losing many men at one blow, and even if an expeditionary force did succeed in landing, it would be impossible to supply it with stores and provisions. It is not very far off from the time when torpedo-boats will be assisted by submarine boats, which will make our shores unassailable from the sea.

3. Third frontier, our closed Black Sea. On this coast, whilst the entrance to the sea is not in our possession, it behoves us to keep both a coast-defence fleet and sea-going ironclads for active service.

First is the coast-defence fleet, like the fleet in the Baltic, of course divided into several local divisions. The second fleet for active service must consist of a known number of ironclads as the chief factor, and to them must be attached self-supporting cruisers, *i.e.*, independent long-range scouts, of the same type as was demanded for the northern coasts, as well as cruisers of less size attached to the ironclad squadron, to inform them of the appearance of the enemy, if the long-range scouts happened to pass the enemy without remarking them. The latter might be permitted to be of small size for economical reasons, but it would of course be better if we could have all of them also large cruisers.

4. The Pacific Ocean, or fourth sea frontier of our Empire, it appears to me we must consider as not entirely defined, and therefore requiring both active and passive defence. There it is impossible to confine ourselves to one squadron or fleet as in the Black Sea. Invasion of our east can only be from the sea, *i.e.*, by descent on our coasts, or the coasts of Corea; such an undertaking can only be accomplished by a fleet. An open sea does not permit of leaving the defence only to a torpedo flotilla; coast-defence ironclads cannot even be mentioned. Ships of our eastern fleet must be all entirely sea-going; small ships would simply be a hindrance in fresh weather. Besides everything already mentioned, both the size of ships and their fighting qualities must compare with the ships owned by our nearest neighbours, because the latter may be the chief cause of our fighting.

At present we have in the Pacific only two places which are fitted to serve as good bases for a fleet—Port Arthur and Vladivostok—but the distance between them is so great that it is desirable to obtain another central port somewhere in the south. Then the number of ships required might be considerably decreased; but at present, whilst we own no intermediate port, it is necessary to have two large sea-going squadrons, consisting of a given number of ironclads and cruisers, attached to the squadron, and of a number of independent self-contained armoured cruisers. The torpedo defence fleet must consist of a large number of sea-going torpedo-boats and small torpedo-cruisers. As in the Black

Sea, so in the East, there must be a "transport mine-obstructor." It is certainly desirable that these transport-obstructors should be self-supporting ships, but for their independence it is required that they should be able either to defend themselves or to be able to avoid a fight. The last quality, in my opinion, ought to be the chief quality; to obtain this ought not to be difficult. In a "transport mine-obstructor" is required stowage room for from 400 to 800 mines, which would weigh about 200 tons, and, besides these, the remaining fighting armament must be confined to Q.F. guns for defence against torpedo-boats. Supply of coal according to the place for which she is intended, but not in any case more than 4,000 miles radius. The engines ought to have a greater speed than that existing in any cruiser, not less than from 22 to 23 knots. Such a speed would be their best defence, as it would give an opportunity of getting away from any cruiser. By decreasing their speed we destroy their independence, and then it becomes necessary to keep them under the defence of the squadron, and to send them alone for any risky operation would be impossible.

*General Conclusions.*—Of the number of ships necessary I will make no suggestion, principally because there is, as yet, no formed opinion on the matter how many ironclads can be manœuvred in a squadron. It can only be said that ten battle-ships must be the maximum, as with such a number line ahead at one cable distant will reach  $1\frac{1}{2}$  miles. If we consider that the kernel of the squadron—the ironclads—must be one-third of the squadron, then it may be known how many cruisers are necessary for the squadron.

Self-sustaining armoured cruisers are here more necessary than ever. My contention in what has gone before leads to the following conclusions:—

- a. In the north it is desirable to have large cruisers.
- b. In the Baltic, even in view of the highest considerations, an active fleet is not necessary, a defensive torpedo fleet is sufficient.
- c. In the Black Sea an ironclad fleet with the necessary number of cruisers, both large and small, as well as a coast-defence torpedo flotilla.
- d. In the Pacific Ocean two ironclad squadrons and the necessary cruisers, as well as defensive mining vessels.

Now we will consider whether it is possible to change ships of one type by ships of another type, or by a universal type of ship.

We will begin the comparison by the following means, by comparing a large sea-going ironclad with a large armoured cruiser; a large armoured cruiser with a second-class battle-ship of from 6,000 to 8,000 tons, a second-class battle-ship with a universal type ship, and, finally, a universal type ship with a large armoured cruiser.

Modern sea-going battle-ships, if one considers every existing ironclad of the first class, may be taken as being armed with four 12-inch guns and twelve 6-inch Q.F. guns—there are slight differences on either side, but they have not much effect on the comparison; thickness of armour from 9 to 14 inches, speed in most cases 17 knots, with a radius of action of 6,000 miles.

Armoured cruisers may be taken as armed with four 8-inch guns, and not more than sixteen 6-inch Q.F. guns, armour 6 inches, speed 20 knots, radius of action 25,000 miles.

In consequence of her superior speed the armoured cruiser can, in action, choose her own distance. Now we will consider at what distance she can cause damage to a first-class ironclad. Her 8-inch guns beginning from 10 cables can penetrate normally 9 inches of armour, and consequently only inside that distance can she damage an ironclad. Her 6-inch Q.F. guns can penetrate at a normal blow only the upper works or barbette covered with less than 6 inches of armour. On closing to 5 cables the 8-inch guns of the cruiser can penetrate 11 inches, but at the same time the 6-inch Q.F. guns of the battle-ship can penetrate 7 inches of armour, and consequently there will not be a spot on the cruiser which cannot be penetrated by shots from the battle-ship. On increasing the distance beyond 10 cables all the guns of the cruiser cease from being able to penetrate the armour of the ironclad, as at 15 cables distance the 8-inch guns of the cruiser can only penetrate 8 inches of armour, and at 20 cables 6 inches; but at that distance the 12-inch guns of the battle-ship penetrate 12 inches of armour, and the 6-inch guns of the battle-ship penetrate all parts of the cruiser with armour less than 4 inches thick. From this it appears to me that it may be concluded that an armoured cruiser, although it may cause damage to an ironclad by smashing up all the upper works, and possibly destroying several guns of middle and small calibres, covered with armour of less than 6 inches thick, will cause no actual harm to the main armament or the living quarters, whilst itself it can be seriously damaged by the ironclad, and even at great distances. Increasing the armour of the cruiser will undoubtedly lead to lessening the coal supply, and consequently damage one of the most valuable qualities of a cruiser by shortening her radius of action. So it appears that striving after a universal type for either cruiser or ironclad only produces harm to both.

Now consider the existing type of second-class ironclad from 6,000 to 8,000 tons.

This type, both for thickness of armour and armament, is very different, but in most cases the main armament consists of four guns of 8-inch calibre or two guns of 10-inch, and from four to six 6-inch Q.F. guns; the mean thickness of armour may be considered as from 6 to 8 inches, speed 15 knots, coal radius 3,000 miles. Taking the units of penetration of Harveyized armour, the same which we took to compare first-class battle-ships with armoured cruisers, we see that a second-class ironclad can begin to damage a first-class ironclad at 10 or possibly 15 cables; but in this case the choice of distance will lie with the first-class ironclad, as she possesses the greater speed, and consequently the second-class ironclad might be placed in such a position as having to fight at 20 cables distance, and although the percentage of hits by the 12-inch guns would not be large, still the first-class ironclad will be invulnerable to the second-class ironclad, as at that distance 8-inch guns only penetrate 6-inch armour, and the 10-inch

guns only 8-inch armour. If we take into consideration also the possibility of a not perfectly calm sea, then the percentage of hits by the second-class ironclad will be less, notwithstanding that the larger ironclad will present a better target.

We will next compare a first-class ironclad with a projected man-of-war recommended in 1899 by an article in the *Morskoi Sbornik*: "Means for Organising a Future Fleet."

This man-of-war, of 7,500 tons, has splendid artillery: ten 10-inch and ten 6-inch guns, armour broadside and turreted 4 inches, speed 20 knots, radius 10,000 miles. The distance at which she will fight an action will be decided by the "specimen man-of-war" in consequence of her speed. Her 10-inch guns can penetrate the armour of the first-class battle-ship at 15 cables (this is her advantage over a first-class cruiser, which can only do so at 10 cables); but the 6-inch artillery of the specimen man-of-war is not able to cause serious damage to the first-class ironclad even at 5 cables, as at that distance it penetrates normally only 7 inches. The 6-inch guns of the battle-ship already at 18 cables pierce 4-inch armour, and consequently the whole of the "specimen man-of-war" is penetrable by the artillery of the first-class ironclad. Above all, the artillery of the sample ship is placed in light 4-inch turrets in pairs, except 6-inch guns placed in barbettes. It seems to me that the light turrets, by the blow of a projectile even not penetrating the armour, would be more likely to be put out of action than the heavier turret with 14-inch armour, which besides being impenetrable to any of the guns of the "specimen man-of-war" presents a mass which requires a more solid base than the lighter turret, and consequently it has less chance of being damaged by a blow.

If we take two specimen men-of-war against one first-class battle-ship, we shall see chiefly their superiority in number of guns. The first-class ironclad will be able to use from one side four 12-inch guns and six 6-inch guns, but two special type ships will be able to use fourteen 10-inch guns and ten or twelve 6-inch guns. But, firstly, the guns of the special type of ship only begin to penetrate the armour of the first-class battle-ship at 15 cables, and that only with 10-inch guns; consequently, closing from 20 cables to 15 cables, the specimen man-of-war will have small effect from her artillery, but from 15 cables the 10-inch guns begin to act. The 6-inch guns will produce no effect outside 7 cables, when they begin to penetrate the 6-inch armour of the battle-ship's barbettes; but on the main armour of the battle-ship they will produce no effect, not even at 1 cable, as at that distance they can only penetrate, by a direct hit, 8 inches of armour; it follows that on the side of the "specimen man-of-war" as against a first-class battle-ship only 10-inch guns can be considered.

The first-class battle-ship, on the contrary, begins to fire with full effect from her 12-inch guns, and already at 18 cables her 6-inch guns penetrate the 4-inch armour of the "specimen man-of-war"; and it follows that under this distance all the sixteen guns of the battle-ship begin to

act, and the apparently superior gun-fire of the two specimen ships already pointed out appears not to be really effective.

In comparing this specimen ship with a large armoured cruiser we notice that its pre-eminence is only in large guns; but for the cruiser there is no necessity for large guns, as its 6-inch guns can at 18 cables penetrate the armour of the specimen ship. Besides which, the large cruiser of 10,000 to 12,000 tons will be a steadier platform than the 7,500-ton ship, will have a greater coal stowage, and, in consequence of its size, the weather will have less effect on its operations.

It is very probable that the time is not far off when, in order to increase the visible horizon, we shall begin to use balloons on cruisers, and then the largeness of the cruiser will be an advantage, in that it will be able easily to stow all the requirements of a balloon park.

Of all the above-mentioned comparisons of types it appears that, having given the requisite qualities to each of them, we come to the following conclusion :—

First-class battle-ships are necessary as the strong kernel of the squadron, and consequently everything on them must be directed to making them impenetrable, as well as to strong artillery armament for attack; every lessening of these qualities for other aims, *i.e.*, for greater speed or greater radius of action, might in battle result in destruction.

Armoured cruisers are necessary as the eyes of the fleet of ironclads, and must have qualities which will supply the deficiencies in the ironclad; they must have the greatest speed, such a supply of coal that it rarely be necessary to coal, and be able to proceed from the squadron or station to which they are attached to the greatest distances. No weather should force them to relinquish their duty or even to diminish their speed in fulfilling their duty. They need not fight with a first-class ironclad—they can always run away from her. Their armour should always be sufficient to defend them from the artillery which cruisers like themselves carry, for which, with an armoured deck, side armour not thicker than 6 inches is sufficient. They must carry an armament of 6-inch guns, with a few 8-inch guns for fighting with cruisers, as well as many small guns for defence against torpedo-boats and torpedo-boat destroyers.

These qualities are only possible in a large ship, and it would be better to decrease the armour and guns in these cruisers than to decrease their speed or size, as with these qualities are united the chief necessities in a cruiser's speed—the certainty of being in time.

## A JOURNEY IN CYPRUS, 1899.

*By Major D. G. PRINSEP, Commanding 56th Battery R.F.A.*

*Friday, May 5th, 1899.*—Having been detailed to visit Cyprus on duty, I left Alexandria on Wednesday, May 3rd, in the "Dundee" (Captain Duncan), and after a very smooth passage in the six hundred-ton cargo-boat named above, and in which I was the only first-class passenger, we arrived at 8.30 off Limasol.

The view from the ship approaching Cyprus from the south is decidedly imposing; in the foreground is the promontory of Akrotiri, with its grey sandstone cliffs and lighthouse, while Limasol can be seen to the east of it, a low line of white houses with red-tiled roofs, and a Greek church with two minarets, all white. Behind Limasol, the ground slowly rises until the mountains commence, topped by Mount Troödos, six thousand feet high, which soars majestically over the minor features, and is the highest point in the island. It is here the Government and the troops make their headquarters during the hot weather, the former going to Nicosia and the latter to a hut camp at Polymedia, three-and-a-quarter miles north of Limasol, for the cold weather. The ground in the vicinity is rich, and cultivated with barley and oat crops at present, and is thickly studded with the carob tree or locust bean, which is a great source of revenue to the inhabitants, the tree producing large quantities of a curved and long large bean, much used for food for cattle, and each tree will produce in value from 10s. to £1 worth of these beans. As the tree requires little or no attention, it is not surprising that they are thought much more of than the cultivation, and indeed the latter might be made much more valuable were water forthcoming, as the ground appears to be of a rich quality and capable of carrying heavy crops. I understand that irrigation works are to be commenced, and by damming the streams near their exits from the mountains a storage of water will be made which cannot but largely enrich the cultivated plains. The general appearance is suggestive of a large park covered with trees, and is most picturesque. The carob tree is so valuable that although a native can be induced to let his lands he will not part with his trees, and consequently a dual ownership may ensue, which is unsatisfactory to both parties.

I drove from the pier to the camp at Polymedia up a very good road in a sort of two-wheeled ambulance drawn by a pair of small ponies, and in due course arrived, finding most comfortable quarters ready for me and muchly-desired breakfast in the officers' mess of the detachment of Sherwood Foresters, after which a visit was made round the camp precincts.

There is only one company quartered here at present, but wood huts on stone plinths are built which will accommodate half a battalion, and the men have a very nice reading-room, library, and a first-rate swimming bath supplied by a mountain stream. The camp commands a magnificent view of the coast round Limasol and as far as Akrotiri to the south. Limasol itself is a small Greek town of white houses and tortuous narrow streets, and is of a "Sleepy Hollow" nature, the inhabitants only waking up when the steamer arrives to take in or discharge cargo. A certain amount of wine is made here, and a very palatable drink it is. I believe two sorts are made, a red and a white wine, but I can vouch for the excellence of the former, and it seems a pity that it will not stand exportation, as it would be a popular drink of the nature of a rich claret. There are a few leather-workers and blacksmiths, and general stores of the usual sort. The town is about a mile long by a quarter mile deep, running along the edge of the bay, and does not contain more than about three thousand inhabitants. I saw nothing in Limasol of architectural interest.

*Saturday, May 6th.*—Went and explored Limasol in the morning, riding a pony kindly lent me by one of the detachment of the infantry officers. There is a small polo ground on the side of the road outside Limasol, but great difficulty is experienced in getting up a game, owing to the paucity of players. Outside the soldiers there are only a commissioner of the district, a commandant of the Cyprus Police, a most charming man and well informed, and a few merchants, etc., so there is a dearth of society, though on all sides hospitality is unbounded, and the stranger fares well here.

In the afternoon I went with the commander of the detachment to see an old castle at Ho Kalossi (*ὁ Καλόσση*), about seven miles away—where Richard Cœur de Lion is said to have lived—a very fine ruin which must have been a large place, though all that now remains is a large square tower of three storeys, in the wall on the east side of which are several stones, carved, carrying the arms of that monarch. Traces of other large buildings can be distinctly seen, and a fine aqueduct brings a plentiful supply of water to the land which carries the best crop of oats and barley I have ever seen out of England.

There is also a most curious old stone church in the precincts of this castle, very small and low, with a circular dome over the chancel at the east end. The rood screen is very finely carved in wood and has painted panels representing St. Peter, the Virgin Mary and Child, with two others, now undistinguishable, while the stone walls have been covered with paintings, of which one still remains of a king in chain armour on horseback with spear and shield, probably meant for Richard Cœur de Lion, and it is still in good preservation. The circular dome was also covered with paintings of religious subjects, but only traces can now be seen. The whole church is very ancient indeed, and is still in use.

After spending a couple of hours at this most interesting place, we rode to Limasol, along the flat and through fields of barley and carob trees, passing a village, and so to Limasol, where we changed at the club and dined with the commander of the police, Mr. Marvrogordato, whose

hospitality was much appreciated, and who has a nice collection of guns, silver ornaments, etc., which have come to him during his residence in this island.

A feature of the island is the excellent cigarette made here at a very cheap price, and their wine, sold by the skinful, is almost nominal in its cost. I made during the day arrangements for the hire of three mules and a muleteer for travelling purposes, and the Cyprus mule is a fine animal indeed, 14 to 14.2 hands high, well built and very wiry and hard. Mules and donkeys are the principal means of locomotion on the island, and are to be procured, if taken for a week or so, at about 2s. a head, including the muleteer. The natives are chiefly Greeks and Turks, the former a fine, well set-up and handsome race, and very picturesque they look in shirts of all colours and stripes and black loose loin cloths or knickerbockers, coloured stockings, and shoes or long sea boots. But, like all Easterns, they are lazy and won't do a bit more work than they can help.

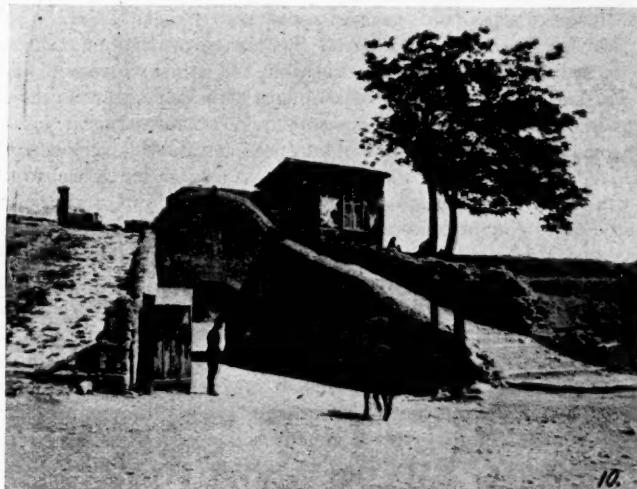
*Sunday, May 7th.*—After lunch I rode with a friend to some excavations at Amathus, which is about nine miles from Limasol on the sea coast to the east, and is reported to have been formerly a large town. Traces of buildings can be seen on a circular-shaped hill standing by itself in a basin which empties into the sea, and it must have been a great stronghold, as the cliff scarps straight up round the top. To the north, in the lower ground, there were a quantity of excavations, which had disclosed complete buildings enclosing the sarcophagi, and several bodies have been found, pointing this out as an ancient burial-ground. I explored two of these buildings, which were made of large blocks of granite in perfect preservation. One was entered by a rectangular door-shaped entrance leading into a hall about twelve feet square and eight feet high, off which were three other rooms all with rectangular entrances.

The second one was more curious, having a ridge roof of beautifully cut stone and perfect masonry work, but only one room, also about twelve or fourteen feet square. Both these tombs were about twenty feet below the surface of the ground, but the earth does not appear to be a natural stratum, and bits of old pottery can be picked out. A quantity of good pottery, scarabs, etc., have been found in these tombs, the masonry construction of which appears similar to those of the Sphinx, at the Pyramids, Egypt.

During these days the Greeks were holding a four days' Olympian Games meeting, and on our way home we passed three of the runners in the sixteen-mile race, who were on their way back to finish the course. I believe their reward is a laurel wreath, but no other prize. These men had their backers or runners-up at points along the road cheering them on and giving them pieces of orange to suck as they ran. Their racing costume was merely a thin vest and a pair of short knickers, socks, and very old shoes. As we got back to Limasol we could see the crowds in the games' field and hear their applause. The gate was kept by a body of zaptiehs, or local police.

*Monday, May 8th.*—Court-martial all the morning till lunch time, and in the afternoon rode my mule down into the town to make some purchases and arrangements for a start on Tuesday morning for Nicosia, *via* Mount Troödos. In the evening dined at Dr. Girvin's up at the camp. I found some pretty specimens of old Venetian glass and one or two scarabs, also some old Roman pottery, rather nice.

*Tuesday, May 9th.*—Left camp at ten a.m. for Mount Troödos, the party consisting of myself on a mule with a borrowed ordnance saddle and bridle, Captain Radford on his pony, a muleteer, Captain Radford's groom (native), and three baggage mules. The march was thirty miles, uphill the whole way, through a monotonous country of high hills and dry parched fields thickly studded with carob and olive trees. The last



GATEWAY NICOSIA, CYPRUS.

ten miles of the journey, however, were pretty, and some of the scenes in the Peripedia Pass leading to Platraes were most lovely, the ground being steep and covered with vine trees, while cataracts and rocks with tumbling water could be seen at the base of the ravines. The scenery from here to the top of Troödos is very like that on the road to Murree in the Himalayas, but not on so grand a scale. We reached Platraes at five p.m., and sat in a grass field and made tea and looked at the magnificent view over Limasol and Akrotiri to the sea, and thought of picnics in fair England, and longed to be there once more. We turned in in a large room in a Greek house after a primitive meal of tongue and hard-boiled eggs, washed down with indifferent Cyprus wine and tea, and were asleep by nine p.m.

*Wednesday, May 10th.*—Up at five a.m., and after a hasty breakfast and a lot of bad language over removal of vermin from our bedding, started for the climb to the top of Troödos at seven a.m. Talking of vermin, Cyprus can boast of being *nulli secundus* in this respect, and I have never in my life been so bitten with insects of all kinds as in this island. But to resume, the climb from Platæas to the summit of the Pass is about six miles, and an ascent of about two thousand feet, through gorge sand round the sides of hills covered sparsely with fir-trees and a little scrub and bushes; the views over the whole island were superb, however. We began the descent on the north side at nine a.m., and a rougher path, or a steeper, I never wish to go over. In about four miles we descended about four thousand feet, and had to walk and lead our animals. No pretty surroundings till we came to Kakopetria, when cascades of water tumbling about in the deep clefts of the hills, and green grass, trees and small fields gave an appearance of health and life again, and this continued till we reached the village of Evrikon, where we stopped at 12.30 for three hours; and while the animals were watered and fed, Radford and I had one of the most delicious bathes in the clear mountain stream I can ever remember. Perhaps it seemed doubly enjoyable because we were very hot and tired, but it was a very acceptable interlude, and we lunched where we bathed. After lunch we struck a trail to the north-east, over some low spurs, up and down, and eventually emerged on to the broken plateau of low land leading to Peristerona, where we arrived tired and very hot at seven p.m. The last part of this march was monotonous to a degree, over rolling plough-land and across dry watercourses, and not a tree to be seen for miles. We were glad to get our evening meal at once in a sort of rest-house which the zaptiehs (Cyprus Native Police) took us to, and to bed at 9.15. Remembering my last night's experience of a couch, I intend to try the stone floor to-night. The Governor is having a carriage road built over this country, they say to take him up to his summer residence at Troödos. If so, I pity the engineer who has to work the gradients, etc., up the hill, as the rocks are big and the soil very treacherous.

*Thursday, May 11th.*—Up at five a.m. and left Peristerona at six for an eighteen-mile ride across the most bleak and uninteresting country I have ever seen. There is not a single tree in sight, and the ground is all composed of shallow depressions and small hills, from which one can only see the next hillock. Added to which the temperature that morning rose to 90° Fahr. in the shade, so it can be imagined what it was travelling in the sun in a hot glare and not a breath of wind anywhere. We arrived at Nicosia at eleven a.m. thoroughly exhausted, and took up quarters at the club there (commonly known as The Canteen), where we were comfortably looked after by the Steward. After a wash and a drink, we took a carriage and drove to Government House and called on Sir W. Haynes-Smith, the High Commissioner, who was very kind and asked us to dine with him that evening. In the afternoon we strolled about Nicosia admiring the beautiful work on the cathedral of St. Sophia; now, alas! a Turkish mosque, but formerly a place of Christian worship. Nicosia is a

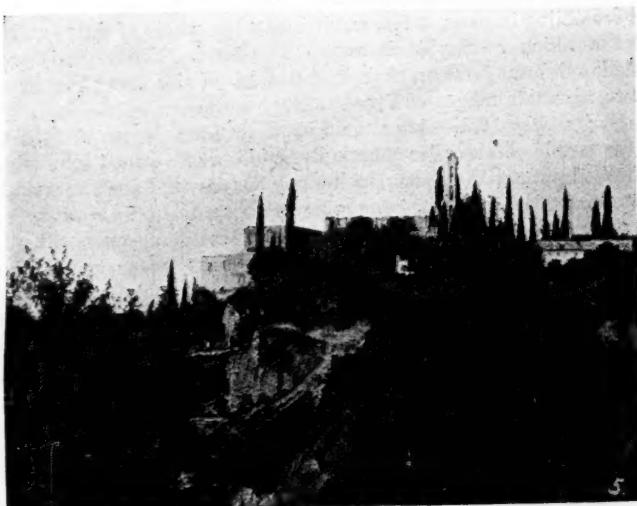
walled and fortified city in shape, an undecagon or eleven-sided polygon, with bastions at the corners, and these are still in good condition, though a bit crumbling in parts. The result is that the whole of the town is in a circle, of which St. Sophia is about the centre. The town is prettily wooded and forms quite an oasis in the midst of this hot plain between the two mountain ranges of Cyprus.

*Friday, May 12th.*—After again inspecting the Church of St. Sophia and the façade of a smaller church alongside, where I took some photos, we strolled through the bazaar, as it was a fair day, and saw a very brilliant and animated scene, all the women having come in from the villages and squatted themselves down in the road to sell their hand-made silk goods, which are very nicely made, and in another part large groups of men were dealing in donkeys, mules, and ponies. The mule is *par excellence* the animal of Cyprus, and though somewhat small (thirteen to fourteen hands average), he is a strong and hardy beast, and there is a large demand for Cyprus mules both in Africa and India. In the afternoon we inspected a museum of most interesting Cypriote antiquities, well deserving of a public building where they could be shown properly, instead of in the upper part of a Turkish house. The collection of statues, glass, and pottery is probably unique, and the history of this island can be traced back by it to the remotest ages.

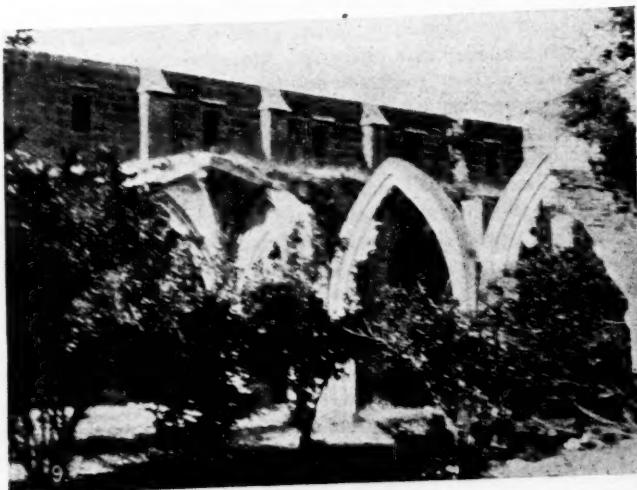
*Saturday, May 13th.*—We got up at five a.m. and started at six a.m. in a most rickety chaise drawn by three ponies to go over the Pass to Kyreina on the north side of the island, sixteen miles off. This proved a most interesting and enjoyable day, as after crossing the Pass the country becomes green and smiling right down to the sea, with luxuriant foliage and plenty of olive and carob trees, and the general views as we drove down the gorges were very fine and impressive, the foreground of rock and bushy scrub with a middle distance of rolling cultivated fields, green with barley and studded with olives and carob trees, while beetling limestone mountains with rugged crests and treacherous-looking slopes stood out in bold relief against a blue Eastern sky in the background.

We arrived at Kyreina at nine a.m. and found the Commissioner of the district in his office, and he, Major Chamberlayne, and the Puisne Judge, Mr. Tyser, were most kind in their attentions to us, and had everything done to show us the beauties of the place.

Kyreina is a pretty little natural harbour with two moles running out to protect it and a circular promenade or wharf inside, while on the east side is a curious old square fort of great age, which has had a corner added to one of its bastions for greater strength. At each corner are bastions and towers, and there appear traces of a wet ditch all round, and it must have been a strong place when built. In the fort, which is now used as a convict prison, can be seen the recesses and long vertical slits in the walls in tiers where the bowmen of old used to draw their arrows to protect the town and harbour, while in parts and on the top many gun embrasures have since been added, probably by the Venetians, and the piles of round stone and iron solid shot still remain in rear of each gun emplacement. We wandered all over this fort, down curious twisting



OLD MONASTERY, BELAPAISE, CYPRUS.



THE ABBEY BELAPAISE, CYPRUS.

stairs and underground passages, our *cicerone*, Mr. Greenwood, of the Cyprus Police, and Mr. Tyser explaining the objects of curiosity as we went along. There is a most interesting little chapel, too, in this fort, with a Roman tesselated floor and three marble pillars (the fourth pillar was a stone wall, so to speak) and three graves under the floor, with their stoneware or red clay coffins, which had been excavated. The altar was distinctly traceable in a niche, and about were found columns and memorials with Greek and Turkish inscriptions. In the afternoon we rode mules to Belapaise, the ruin of a magnificent monastery about three miles off and one thousand feet up the hill. This must have been a very large monastery, and shows remains of beautiful carving and work on the transepts and columns, but is greatly shaken and destroyed by earthquakes and time, being built with sandstone. On the west side of the Pass stood the Castle of St. Ilarion, about three thousand feet high, perched like an eagle on a rocky pinnacle, and a veritable stronghold, but now in ruins. We had no time to visit this relic of a prosperous bygone age, but from its size it must have been of great importance and immense strength. Both it and Belapaise overlook thousands of fertile acres at their feet, and the Mediterranean glitters and shimmers in the sun as far as one can see, till the eye catches the outline of the snow-covered Taurus range of mountains to the north in Asia Minor.

Our carriage met us half way up the Pass and we drove back, arriving at 8.15 p.m., to Nicosia.

There is another castle similarly situated to Ilarion on Bufavento, which has a curious history. A certain queen of the district or island had a pet dog, and by some means or the other both dog and woman got the mange. This so disgusted the lady that she and her dog went up in retirement to Bufavento Castle. After a time it was noticed that the dog used to disappear for a couple of hours at a time during the day, and also that it got perceptibly better, so the queen gave orders for the dog to be watched and followed. They discovered that the dog used to go and wallow in a warm spring some little distance from the castle, and the queen therefore tried the same treatment, with the result that she got cured, and in gratitude built a church over the spring and was buried there with her dog. The story is a good one, even if it is not true, which however it is believed to be.

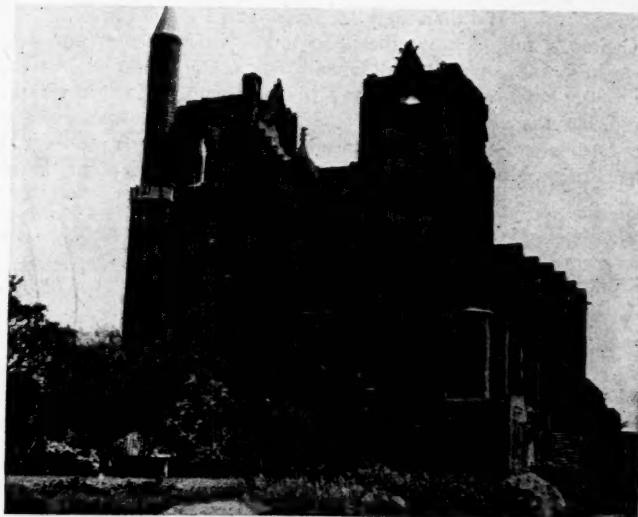
*Sunday, May 14th.*—We left Nicosia in a carriage to Vatili, about eighteen miles, at eleven a.m., and on arrival found our mules, which we had sent on the day before, ready for us, and we then rode about fifteen miles more to Famagusta, on the east side of the island, arriving at about 6.30 p.m., and in the evening we dined with the Puisne Judge of the place, Mr. McCasky, who was most kind and gave us every use of his house. There were also the members of the Assize Court staying with him, so we sat down, a party of six men, and had a most enjoyable evening.

*Monday, May 15th.*—After breakfast at the Greek inn where we put up, we rode our mules to the old ruined fort of Famagusta, about one and a half miles from the new town of Varosia, and explored the interior. It is a wonderful old fort, overlooking a harbour which requires dredging to

be of much use, strongly built and in good repair considering the age of it. There can be seen traces of the drawbridge and a strong tower over the main gate, and bastions at the corners. A ditch, probably wet formerly, now planted with trees, and niches for bow and arrow men as well as embrasures for guns. We found two guns still in the tower, one a long one of bronze, about three and a half inches in bore, and the other larger, on an old field carriage, and of iron, with a Latin inscription on its breech. The interior of the fort is an inhabited Turkish village, and there is also a prison with an important façade of arches and marble columns, in which are stored iron and stone shot of all sizes, and a quantity of carved pieces of marble, cornices, escutcheons, heads, etc., and one or two very ancient pieces of guns.

The most interesting piece of architecture, however, is the cathedral, which has a very fine front on the west, and the apse to the east is also in good state of preservation. It has two towers, incomplete, on one of which is built a Turkish minaret, as the place is used as a mosque still; but traces of the excellence of design and carving are still visible, as in the cathedral at Nicosia. A curious effect is noticeable in the Latin cathedrals used as mosques: the cathedral altar faces east, but the Turk has to face Mecca, which is about south-east in Nicosia, consequently all the Turkish pulpits are placed in the south-east corner, and the platforms and carpets, etc., are arranged thus inside, which gives a skewed effect, and the old place where the altar was is left empty and blank. It certainly seems a pity these churches could not have been kept for Christian worship, as the Turk takes no trouble to preserve ancient buildings, and they are all gradually falling away into decay. Besides the cathedral, are ruins of many other fine churches and buildings inside the fortress, and all tend to show a most populated and prosperous condition of things in former years. There is an enormous carved marble lion, in bad repair now, reposing on the ground near the harbour gate, and on one of the outworks we came across a marble slab with coat of arms and Latin inscription, showing that a certain man either was governor or built the *annexe*, but I did not copy it and have forgotten the name; the date was about A.D. 1429. After a bathe in the blue waters of the Mediterranean we returned to lunch with Mr. McCasky. We walked about the town, etc., but saw nothing of note.

*Tuesday, May 16<sup>th</sup>.*—Up at six a.m. and off by 6.40 for a march to Larnaka, which we reached at one p.m., in time for lunch. This is the most important seafaring place on the island, and nearly all goods from the interior are exported from here. There is not much to see in the way of ruins, but the place has a small modern fort used as a prison. The Commissioner here, Mr. Cobham, was most kind to us and showed us round everywhere. The bazaar is curious and picturesque, and there is a certain European population connected with the shipping, etc. As I write this, looking over the roadstead, there are two steamers, one barque, and a dozen or so small sailing-ships busy taking in or discharging cargo; the principal exports being wool, barley (which Bass & Co. buy up), carob beans, and silk, while the imports are cotton goods, sewing machines, etc., and wood.



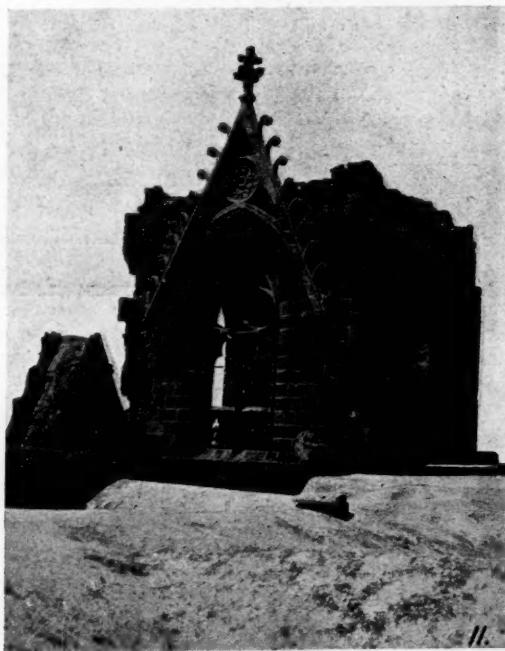
THE CATHEDRAL, FAMAGUSTA, CYPRUS.



THE CATHEDRAL, FAMAGUSTA, CYPRUS. EAST APSE.

On the whole the Greeks, Turks, and Cypriotes get on amicably together, but now and then there are fracas and a murder or so.

Cyprus is full of antiquities, and tombs are opened up and various articles of bronze, pottery, glass and coins are found almost daily, showing the great age and changes of the island. Much is yet undiscovered, but the sites of old Roman and Phoenician towns and burial-places have been located. The antiques are dug up by a representative of the British Museum under the following agreement: the Museum



THE CATHEDRAL, FAMAGUSTA, CYPRUS. WEST TOWER RUIN FROM ROOF.

takes one-third, the Government of Cyprus one-third, and the owner of the land one-third, and as all these antiquities are forbidden to be exported, the owner, who is usually a farmer, sells his share to the British Museum, and what is not wanted is broken up. This latter I consider a vandalism, and I cannot see any useful object attained by prohibiting the export of curios if people are willing to buy them for their private collections, unless it is to enhance the value of the few that are kept. A dog-in-the-manger policy is not the one to attract sightseers, and if there were less restrictions of this sort perhaps many would come and spend money in the island who do not do so now.

*Wednesday, May 17th.*—Loafed about Larnaka all the morning, watching the picturesque bazaar and the shipping. At two p.m. our mules came round to the Royal Hotel where we were staying, and we started off to Ziyi, about twenty-six miles, arriving at 7.30 p.m., having travelled slowly on account of one mule which came down the day before and cut his knees. The road, or rather track, lay along the south shore of the island, about one mile to half a mile from the sea, and the country was undulating and not ugly. Ziyi is a custom-house only, with large store-houses for storing the locust bean in the season prior to shipment. There was a small pier, and the whole place is looked after by the zaptiehs, or Cyprus Police, a very fine and useful body of men, chiefly Turks, who very efficiently control the very mixed population. Their dress is a blue serge jacket and trousers, brown belts and gaiters and red fez. Their arms are Martini-Henry rifles, sword bayonet, and carbine and sword for the mounted men. They are most civil and obliging, and indeed the whole population is a very well mannered one to Europeans, all people getting up and usually taking off their hats or making some sort of obeisance when an Englishman passes.

*Thursday, May 18th.*—After a lovely bathe in the Mediterranean off the pier, we left Ziyi at 8.15 a.m., and by dint of pressing on, canter and walk alternately, we reached Polymedia camp in time for lunch at one o'clock, the distance being about twenty-one miles. Here our trip ended, and we had nothing more to do but to pay off the muleteer and settle up accounts generally. The camp here is prettily situated three miles from Limasol, and the ground slopes up covered with barley crops and carob trees.

*Friday, May 19th.*—Packed up and off by the Austrian Lloyd Mail in the evening.

*Saturday, May 20th.*—Arrived by steamer at Paphos and went ashore. The town is prettily situated about a mile and a half inland, on a shelf of high ground. In the foreground is a small harbour dominated by a curious old square fort in ruins, and there were formerly two moles which ran out to form the harbour. The Temple of Venus is about three miles off, and old Paphos town was close to the harbour, but now in ruins. The mountains formed a pretty background to the whole picture.

*Sunday, May 21st.*—Arrived at Port Said and disembarked there as the plague had broken out at Alexandria, and our ship had instructions to proceed no further. Arrived back at Cairo at 11.30 p.m. same evening.

## ON THE FRAMEWORK FOR OUR FORCES WHICH THE WAR IN SOUTH AFRICA APPEARS TO SUGGEST, AND ON THE WAY TO GIVE DUE WEIGHT TO MILITARY AND NAVAL OPINION WITHOUT INJURING OUR SYSTEM OF GOVERNMENT.

*By Colonel H. BLUNDELL HOLLINSHEAD BLUNDELL, C.B.,  
M.P., p.s.c., Retired Pay, late Grenadier Guards.*

THE war in South Africa has tested our power of putting an army into the field, and while it has shown that our Reserve system and our system of mobilisation have worked admirably (except in one particular), it has also shown that the force we can put into the field is inadequate to our needs, even for a colonial war.

Instead of such a war requiring 30,000 to 40,000 men, six times that number were needed.

The patriotic spirit of our Militia, Yeomanry, and Volunteers, and the unexpected but most welcome help of our self-governing Colonies, supplied much of the deficiency, which the large force sent out of Regular troops required, to complete the numbers found necessary.

In any reconstruction of our Army system we must not rely upon the great patriotism which was displayed on this sudden and unexpected emergency being always equally available and effective; not that I suggest that there will be any want of patriotism on the part of those serving in the Auxiliary forces in future wars; but the danger is a real one, that unless we are careful we may impair our system of Auxiliary forces.

Men who now enter the Militia, Yeomanry, or Volunteers might be indisposed to do so if they felt that they might have to take part in any war abroad.

A man might say, "My duty to my family has prevented my going into the Army, which I wished to do; but if I enter an Auxiliary force I may have to take part in a campaign abroad. The regimental pressure is so great in such cases, I should not be able to resist it; it is better for me not to join these forces."

There is then a danger of impairing the Militia, the Yeomanry, and the Volunteers; but these forces are the breeders of the Army and of the military spirit of the country.

This danger must be guarded against.

The existing, or part of the existing, regiments of Militia, Yeomanry, and Volunteers should be preserved for home defence, but special corps from each of these forces should be reserved or formed for service in the field abroad.

The war system of a nation which relies upon voluntary enlistment to provide it with recruits should resemble a trammel net, so that it may be able to take of every kind.

1. There are men who are ready to enter the Army.
2. There are others who are unable or unwilling to enter the Army, but are ready to go on a campaign (it may be that they dislike the discipline or the monotony of service in peace-time). It is highly probable that this class is much more numerous than people would expect it to be.  
Such men should form corps of Militia, Yeomanry, and Volunteers liable for field service abroad, the corps being styled "Imperial," or by some other designation which indicates that they are liable to serve in the field abroad.
3. There are men who have military tastes and who are prepared to do their duty in case of invasion as well as either of the former classes, but from family ties and various other causes do not wish to be involved in a war abroad.

Such men in joining the Militia, the Yeomanry, and Volunteers should feel that their regiments will be used for home service only.

Assuming that there will be two kinds of Militia—one for field service abroad, the other for home service—there should be a practicable and well-understood system of general service in the Home Militia, *only to be put in force in extreme emergency.*

The splendid manner in which this country has come forward during the South African War shows clearly that the Voluntary system must be used *as far as possible*, and leads one to hope that it will always be sufficient to meet our needs; but the experience of America must not be forgotten.

America spent a thousand million pounds sterling in four years of war, and at the end of the war, after paying enormous bounties and incurring all this debt, was obliged to resort to compulsory service. This shows us that the cost of war is now enormous in a serious struggle, and that in such a struggle the fearful cost of such a war must not be enhanced by shutting our eyes to the fact that in a death-struggle compulsory service at home may become necessary even to this country. But we may fairly hope to escape such a struggle.

The policy of our own country has undergone no change; it desires as much as ever it did to keep clear of any quarrels of the Great Powers on the Continent of Europe, though it must be admitted that the expansion of these Great Powers outside Europe has altered our relation to them.

What then should be done in any reconstruction of our Army system?

Retain our present system for recruiting our Army which garrisons India and the Colonies. Some minor changes are no doubt necessary.

Let us recollect that by taking men very young for our Army a larger number of men trained to arms will at any time exist in the nation, and that to rely upon high pay drawing more serviceable men of 20 years of age would be a dangerous system in the present day.

The Reserve system should be altered where it is obviously defective, by giving a proportion of men of fair character, when their service with the colours is over, the power to join a Furlough Reserve liable to rejoin their regiment when required for special service, receiving a higher rate of pay, probably 8d. per day instead of 6d. This would enable a service battalion or regiment to be filled up for any war to its service strength without waiting for that preposterous announcement of "national emergency."

It would be interesting to trace this declaration to its origin, possibly it might be to some far-off date, when at a particular period of the year "Kings went forth to battle."

At any rate, in our case, whatever it may be on the Continent, such a declaration is an anachronism—it permits the stable to be locked after the steed is stolen.

If this change were to be made in our Reserve Service and certain corps of Militia, Yeomanry, and Volunteers were reserved for home defence, while others now existing and newly-raised corps were formed for field service abroad in time of war, and if there was a well-thought-out system of general service in the Home Militia in case of extreme emergency, this country would, it is contended, be able to use its population to the best advantage.

I do not propose to enter in detail upon anything but the framework of the system suggested, but I will assume that in any re-organisation of the Army the districts will be properly organised, as is done in other countries, and as was proposed many years ago by Colonel Home, R.E., and that they will be provided with a sufficient staff to enable the work done by the Auxiliary forces to be really overlooked by our best instructed officers. This the present staff cannot do; but, any additional cost which might be entailed, if it ensured the combination of all our forces as they would be combined in war, would be amply repaid by the greater efficiency which would inevitably result.

I assume also that some special attention will be given to the field work of the Army.

That manœuvres will be carried out on fresh ground.

That the period of a Commanding Officer's command of a regiment of cavalry or battalion of infantry shall be able to be extended to at least seven years. These commands are probably the most important posts in the Army; the officers holding them should not feel that they are birds of passage. The efficiency of regimental officers and men largely depends upon the commanding officer.

I assume also that a Field Adjutant-General will be attached to the Commander-in-Chief, who under him may have an eye to the education of officers and staff officers and shall attend manœuvres for the

Commander-in-Chief, or with him if he is able to attend himself, so as to watch the manœuvres and the performance of the staff duties at them.

By the last arrangement of duties at the War Office, the Commander-in-Chief's assistant (the Adjutant-General) was separated from his chief and made the head of a separate department, and his time is very closely occupied; but no responsible officer was given to the Commander-in-Chief to carry out field duties.

I now come to the question of the relation between the opinion of the Commander-in-Chief and the Minister, and I may remark that the same applies to the opinion of the First Naval Lord and the First Lord of the Admiralty.

We have it stated from an indubitable source that serious differences may exist between the Commander-in-Chief and the Minister, not possibly as to what ought to be done, but as to what can be done.

It has been proposed that the minutes of the Commander-in-Chief to the Minister shall be submitted to Parliament. This would constitute Parliament, which is a legislative body, into an executive body, and would do infinite mischief to our system of Government. Still the matter is a very important one. Let me put a case.

Suppose the First Naval Lord were to come to the conclusion that we sacrificed armament too much to coal-carrying capacity in our Fleet, and that in an action with similar ships, but with superior armament, our vessels would be at a disadvantage.

Suppose again that the First Lord of the Admiralty did not disagree with this view, but thought the political skies clear, the time inopportune for an expensive change, and that for the moment a preponderance of vessels was always available.

It will be generally admitted that this case is a grave one and ought not to slumber long.

Lord Hartington's Commission showed that the relations between the Cabinet and the military side of the War Office cannot under the form of Government under which we live be much altered, but there is one change which it is here contended is urgently required.

There ought to be an adequate retirement for the officer holding the post of Commander-in-Chief, and the same applies to the post of First Naval Lord at the Admiralty.

These officers hold very responsible appointments, they may be men with large families and small means. They ought to be able to resign if they differ very seriously from the Cabinet. As it is now, unless the matter is of clearly vital importance, when they would certainly resign, the temptation to continue in office is almost irresistible; but while the professional advisers remain in office the country assumes that they are largely in accord with the Cabinet.

The effect of this proposal would rarely be felt, but cases might arise when the country ought to know that there are serious differences upon important matters before they are absolutely vital.

Now the resignation of a high official, equally with that of a Minister, always leads to an explanation of the causes of the resignation.

I think it will be found that Sir George Brown resigned the post of Adjutant-General when Lord Hardinge was Commander-in-Chief, and the explanation given by Lord Hardinge was that they differed as to the weight the soldier should carry. I have no means of referring, but believe that it was as stated.

If the resignation of the Adjutant-General led to an explanation, that of the Commander-in-Chief or of the First Naval Lord would inevitably require an explanation.

## NAVAL NOTES.

**HOME.**—The following are the principal appointments which have been made : Captains—H. Leah to "Diadem"; H. S. F. Niblett to "Canopus"; J. Durnford, C.B., D.S.O., to "Algiers"; Sir A. B. Milne, Bart., to "Jupiter." Commanders —W. H. Nicholson to "Phœnix"; G. C. Marescaux to "Proserpine"; R. P. Cochran to "Medea."

The new first-class battle-ship "Glory" left Portsmouth for China on the 24th ult., where she will relieve the "Centurion" as flag-ship. The new sloop "Condor" commissioned at Chatham on the 2nd ult. for the Pacific and left on the 10th ult. for her station, where she relieves the first-class gun-boat "Pheasant." The second-class cruiser "Sybille" left Portsmouth on the 2nd ult. for the Cape, where she relieves the third-class cruiser "Barrosa." The third-class cruiser "Fearless" paid off at Portsmouth on the 8th ult. The first-class cruiser "Blake" left Plymouth on the 10th ult. with a new crew for the "Renown" at Malta, and arrived at Plymouth with the relieved crew on the 26th ult. The sloop "Swallow" arrived at Plymouth on the 13th ult. from the South-East Coast of America. The second-class cruiser "Hermes" arrived at Plymouth on the 14th ult. from the West Indies, having been sent home owing to the grave defects which have developed in both engines and boilers, the latter of the Belleville type, which have given trouble ever since the ship was commissioned a year ago. The new third-class cruiser "Pioneer" commissioned at Chatham on the 15th ult. to relieve the first-class gun-boat "Hebe" in the Mediterranean, and the first-class gun-boat "Sparrow" commissioned the same day at the same port to relieve the "Ringdove," a sister vessel, in Australia. The second-class cruiser "Scylla" arrived on the 20th ult. from the Cape with the relieved crew of the third-class cruiser "Barracouta." The third-class cruiser "Blanche" commissioned on the 21st ult. at Devonport to relieve the third-class cruiser "Magicienne" at the Cape. The ships of the Reserve Squadron have dispersed again to their respective stations, with the exception of the second-class battle-ship "Thunderer," port guard-ship at Pembroke, which has been sent to Chatham, where she will pay off, her officers and men turning over to the first-class battle-ship "Hood."

*Gun Accident on board the "Thunderer."*—While the battle-ship "Thunderer" was on her way from Pembroke Dock to Devonport to join the Reserve Squadron an accident occurred to two of her guns, the cause of which is so far unexplained. The vessel left Pembroke about 9 a.m., and when she was off Milford Haven a target was dropped for firing practice, the 10-inch breech-loading turret guns being used. A projectile had been placed in one of the guns and the electric current turned on, when there was an explosion quite different from that which usually accompanies the discharge of a projectile. Nothing came out of the gun except a few fragments of the projectile, which was thrown some distance from the ship. The base plate of the projectile was left in the gun, as well as a portion of the frame, and when the plate was afterwards removed the pressure of the gas left in the gun caused a portion of the projectile to be expelled with some force from the breech end of the gun. When the second gun was fired a hole between 2 inches and 3 inches in diameter was blown through the projectile, the outer part, together with the base plate, being left in the gun. In this case the base plate was separated from the rest of the projectile. Such a thing is believed never to have occurred in any ship before. The only explanation so far suggested is, either that the powder in the projectile was damp, or that there was a quantity of water in the guns. A

cast will be made of the inside of each gun to ascertain whether either has been damaged. So far as can be seen from the outside, both guns are sound.

*Steam Trials.*—The new sloop "Vestal" has completed her second special trial satisfactorily. The trial lasted 57 hours, and the following results were reported:—Draught of water, forward 10 feet 4½ inches, aft 13 feet; vacuum, 27·62 inches; revolutions, 163·2; I.H.P., high 189·6, intermediate 256·4, low 288·9—total I.H.P., 734·9; coal consumption, 1·86 lbs. per I.H.P. per hour; speed, 11 knots. The trial, which was of a satisfactory character, was made at half-full power, the object being to ascertain the coal consumption per I.H.P. per hour on a run with 35 tons of Welsh steam coal such as is supplied to ships on ordinary service. The whole of the boiler power—four Belleville boilers with economisers—was used. The previous trial was made with hand-picked Welsh coal, when the consumption averaged 1·82 lbs. per I.H.P. per hour. The weather, however, was more favourable at the trial with ordinary coal than at the hand-picked coal test.

The new first-class cruiser "Spartiate" has commenced her trials, and concluded the first of the series, a 30 hours' run at one-fifth her full power, satisfactorily, using only ten out of her thirty Belleville boilers. She drew 24 feet 6 inches forward and 26 feet 5 inches aft, and had 215 lbs. of steam to the square inch in her boilers. The vacuum was 26·9 inches starboard and 27 inches port, and the revolutions were 69 starboard and 70·5 port. The total I.H.P. was 3,834, and the mean speed of the trial was 12·3 knots. The coal consumption worked out at 1·83 lbs. per unit of power per hour. The second trial for 30 hours at four-fifths the total power had to be brought to a premature conclusion, owing to the over-heating of the bearings and the fusion of the white metal. The damage has not yet been made good.

The new sloop "Shearwater" has completed her final full-speed trial satisfactorily. The results were as follows:—Draught of water, forward 10 feet, aft 13 feet; pressure of steam, in boilers 226·8 lbs., on engines 200·8 lbs.; vacuum, 23·5 inches; revolutions, 194·2 per minute; I.H.P., high 430, intermediate 461·3, low 541—total I.H.P., 1,432·3. The coal consumption was 1·57 lbs. per I.H.P. per hour.

The new torpedo-boat destroyer "Lee," built by Messrs. Doxford & Sons, of Sunderland, has undergone a successful 3 hours' official coal-consumption trial. On the six runs on the measured mile her average speed was 29·9 knots, but for the whole of the 3 hours the speed was 30·11 knots. The official results were as under:—Draught of water, fore 5 feet 4½ inches, aft 8 feet 10½ inches; steam pressure, in boilers 249 lbs. per square inch; vacuum in condensers, starboard 23·3 port, 23·1; revolutions per minute, starboard 380·7, port 380·4; mean I.H.P., starboard 3,382, port 3,193—total I.H.P., 6,575.

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*Annual Report of the Hydrographer of the Navy for 1899.*—The annual report of the Admiralty Hydrographer for the year 1899, lately issued, indicated considerable activity on the part of the surveying staff. Eleven ships in all were employed, with the result that 1,223 miles of coast line were charted, and an area of 4,654 square miles sounded. If any justification for such work was required it is assuredly to be found in the intimation that last year no fewer than 274 rocks and shoals which were dangerous to navigation were reported. Of these, 36 were discovered by surveying-vessels, 14 by other of Her Majesty's ships, and seven by various British and foreign vessels. No fewer than 23 were found by ships which were unfortunate enough to strike upon them, and as many as 194 were reported by colonial and foreign Governments. In the best-known waters the need for resurveying at frequent intervals is so well established as to suggest that hydrography must always be the handmaid of safe navigation. If an instance were needed it might be found in the experience of the "Triton," which last year made an examination of Hull Roads, with a view to finding a berth for the coastguard ship. It was dis-

covered that a considerable shoaling had taken place since the last Admiralty survey in 1894, and that the deep water space available did not afford sufficient swinging room even for a vessel of the dimensions of the "Galatea." Indeed, further examination of the Humber above Hull showed general shoaling, unaccompanied by any deepening of the channel, which, it is said, may have a somewhat serious aspect in connection with future navigability. Local plans and surveys made in the vicinity of Goole show that the changes in the river are so frequent that no chart of the locality would represent the true state of the river for more than a few weeks at a time. It appears, too, that recent works at Goole have resulted in the formation of dry land on banks formerly covered with water.

In the Thames estuary little surveying work seems to have been done last year. A survey of the bar at Sheerness, previous to the selection of suitable positions for gas buoys as aids to the navigation of the Medway, revealed but little change; but the annual examination of the Shingles Patch in the Duke of Edinburgh Channel resulted in the finding of a least depth of 13 feet, which shows that the shoaling of this obstruction continues. The "Egeria" was engaged last year in the Pacific in a sounding cruise connected with the proposed cable from Vancouver to Australia. She obtained 166 soundings of an average depth of 2,420 fathoms, which entailed the letting out and the reeling in of no less than 789,000 fathoms of wire.

In the Red Sea the "Stork" made another long and careful search for a rock reported by the British steamer "Akbar" at the entrance and in the fairway of Massowah Channel, much used by vessels of low steam power. The case is cited as a good example of reports which occasion the expenditure of a good deal of time and money, and lead neither to verification nor disproval. The "Akbar" struck the ground, but owing to thick weather was uncertain of her position. The "Stork" made a first search in 1898, and found very uneven bottom, with various patches of 10 fathoms, but no danger. Shortly before the subsequent survey the American yacht "Norna" reported having anchored near a three-fathom patch, not far from the position suggested by the "Akbar," and gave the locality. Verification, therefore, appeared to be an easy matter. The officers of the "Stork," however, searched for six weeks without finding shallow water, and it was ascertained that at the position reported by the "Norna" neither of the islands given by her as marks could be seen. The net result of the two investigations is a declaration that, if the supposed rock exists at all, it must be exceedingly small, but that in such coral-studded waters as those of the Red Sea it is impossible to say for certain that there is no danger near the reported locality, even after repeated search.

On the north-west coast of Australia the "Penguin" carried out surveys desired by the West Australian Government. They disclose many new shoals dangerous to navigation, and off-lying islands were found to be as much as four miles out of position on the chart. Mary Anne Passage was discovered to be narrower than formerly charted, a matter of some importance, as this route is used by steamers trading between Fremantle and the north-west ports, and also to Singapore, a traffic stated to be increasing. Off Port Cloates, where the Strathmore Rock was shown on the charts, a cast of 446 fathoms was obtained, and in view of the extreme improbability of its existence the rock has been removed from the charts. A series of soundings off shore between Cape Naturaliste and King George's Sound was taken, to enable ships to ascertain their correct distance from the land in thick weather when rounding Cape Leewin, the landfall of all mail steamers bound for Australia.—*Times and Naval and Military Record.*

FRANCE.—The following are the principal promotions and appointments which have been made: Rear-Admirals—C. T. Bayle to command of a division of China Squadron; C. F. Antoine to command at Havre. Capitaines de Vaisseau—E. A. Marquer, J. B. Melchior, and C. F. Antoine to be Rear-Admirals; H. Dutheil de

la Rochère to "Formidable"; E. A. Voiellaud to command of Naval Division in Corsica. Capitaines de Frégate—E. A. Voiellaud, M. J. De la Croix de Castries, E. Perrin, N. J. Colin, A. M. Pichon, and R. A. Lapotaire to Capitaines de Vaisseau; R. Duval to command of *Défense-Mobile* at Cherbourg. — *Le Journal Officiel de la République Française*.

Rear-Admiral Gourdon hoisted his flag at Brest on the 15th ult., on board the first-class armoured cruiser "Bruix" instead of the "Dupuy de Lôme" as first arranged, in command of the newly constituted Light Division of the Northern Squadron. Attention is called to the fact that owing to the dearth of large cruisers there is none available at present which affords proper accommodation for a rear-admiral and his staff, the result being that Admiral Gourdon, although he has his Chief of Staff with him, has no flag-captain, while the commissary-in-chief, the principal medical officer, and engineer on the staff have had to have quarters found for them temporarily on board the "Amiral-Duperré," one of the battle-ships, and are thus separated from the division with which their work lies. Rear-Admiral Gourdon will eventually hoist his flag on board the new first-class cruiser "Chateaurenault," when that ship is ready for service. Rear-Admiral Touchard struck his flag on board the "Formidable" as second-in-command of the Northern Squadron on the 25th ult., and Rear-Admiral the Marquis de Bausset Roquefort Duchaine D'Arbaud, his successor, hoisted his on board the same ship on the following day.

The tactical composition of the Mediterranean Squadron will be for the present as follows:—

*Battle-ship Squadron:—First Division.*

First-class battle-ships—"Saint Louis" (flag-ship of Vice-Admiral de Maigret, Commander-in-Chief), "Charlemagne," "Gaulois."

*Second Division.*

First-class battle-ships—"Charles Martel" (flag-ship of Rear-Admiral Roustan, Second-in-Command), "Jauréguiberry," "Bouvet."

*Light Squadron:—First Division.*

First-class armoured cruisers—"Pothuau" (flag-ship), "Latouche-Tréville," "Chazny."

*Second Division.*

Second-class cruisers—"Cassard," "Du Chayla."

*Third Division.*

Third-class cruisers—"Linois," "Galilée," "Dunois."

*The Torpedo-boat Flotilla* has been divided into two groups:—

*First Group.*

Destroyers—"Espingole," "Hallebarde."

*Second Group.*

Torpilleurs-de-haute-mer—"Forban," "Cyclone," "Flibustier."

The Mediterranean Squadron is now a fairly homogeneous force. Each of the two battle-ship divisions has a full speed of 18 knots; although the guns of the ships are differently mounted, as in the First Division the ships carry their four heavy guns in pairs in closed turrets and the secondary armament in a casemate, while in the Second Division the ships carry their heavy guns singly in barbettes, one forward, one aft, and one on each beam, with the secondary armament in small turrets. The armoured cruisers also have a speed of 18 knots, while the protected ones average about 20, and the torpedo-boats and destroyers from 25 to 27 knots.

Vice-Admiral Pottier, Commander-in-Chief of the French fleet in China, in accordance with his instruction to show the flag as much as possible where French interests are concerned, has made the following dispositions:—

The fleet has been divided into three groups, each under the orders of a senior captain. The First Group is stationed in the Gulf of Pe-chi-li, and consists of:—

First-class cruiser—"Guichen."

Second-class cruisers—"Pascal," "Friant."

Gun-boats—"Vipère," "Décidée," "Alouette."

Torpedo-boat—"Takou."

Torpedo-aviso—"Bengale."

The above group will have one vessel at Nagasaki, one or more at Chi-Fu, and the remainder at the base, Taku.

The Second Group will be stationed at Shanghai, and consists of:—

First-class armoured cruiser—"Amiral-Charnier."

Second-class cruisers—"Chasseloup-Laubat," "Jean-Bart."

Gun-boats—"Surprise," "Lion."

This group will guard the Yangtse and the neighbouring islands as far as Foo-chow.

The Third Group, which will guard from Foo-chow to the frontier of Tonkin, consists of:—

Second-class cruiser—"Descartes."

Gun-boats—"Styx," "Avalanche," "Argus," "Vigilante."

The "D'Entrecasteaux" (second flag-ship) and transports are not included. The crew of the "D'Entrecasteaux" having had a hard time lately, she has been sent to Japan to recruit. Admiral Pottier's flag-ship, the "Redoutable," is also not included.

The armoured gun-boats "Cocyté" and "Phlégeton" are to be despatched to Saigon for colonial defence; they are suitable for river work, and are armed with 270-millimetre (10-8-inch) guns. The "Styx," a gun-boat of the same class, was sent to China in 1893. The aviso-transport "Durance" left Rochefort on 25th November for the Pacific station, where she will relieve the aviso-transport "Aube."

The Minister of Marine has decided to strike the name of the sea-going torpedo-boat "Lansquenet" off the list of the Navy, and she is to be advertised for sale. The "Lansquenet" has never been a success; she was built at Nantes in 1893, and was designed for a speed of 26 knots, but this speed, though both engines and boilers were changed, was never attained. She was attached for some time to the Channel *Défense-Mobile*, but has been a bad bargain for the Navy and never properly fit for service.

A court-martial has been held at Cherbourg for the trial of Lieutenant Morillon for the loss of the torpedo-boat "Bouet-Willaumez" at Roche Gautier, as reported in these Notes in October. According to the defence, a proper course was being steered at the time, and the disaster is attributed to unforeseen currents and fog. The court acquitted Lieutenant Morillon, and the President, addressing him with Gallic politeness, said:—"Dear comrade, you may leave the court with head erect; and I beg you will now ascend the tribune, where your judges will be proud to shake hands with you."

#### *In the Dockyards:*

*Cherbourg.*—The work of setting up the machinery of the new second-class battle-ship "Henri IV." is proceeding satisfactorily, and it is hoped she will soon be ready for her trials. Owing to budgetary considerations, it has been decided to defer the sending of the torpedo-boat destroyers "Salve" and "Lance" to Brest and Lorient respectively, where, during the manœuvres and in time of war, they will carry the broad-pennant of the officers commanding the *Défenses-Mobiles* of those districts; the "Saint-Barbe" is already stationed at Dunkerque for this purpose.

The number of submarine-boats actually under construction at this port is six, which include the two submarines, properly so-called, the "Français" and

"Algérien," and the four submersible boats of the "Narval" type, the "Sirène," "Triton," "Silure," and "Espadon"; the Estimates for 1901 make provision for the construction of two more, so that with the "Morse" and "Narval," ten of these little vessels will have been built at this yard.

*Brest.*—The Minister of Marine has approved of a contract being concluded with the Compagnie des Forges de Châtillon et Commentry for the construction of the armoured conning-tower of the new armoured cruiser "Léon-Gambetta," to be delivered in seventeen months, and of a contract with the Société des Ateliers et Chantiers de la Loire, for the making of the machinery for the same ship in twenty months, a further extension of twelve months being allowed the firm for setting the engines up on board the ship.

The new first-class battle-ship "Iéna" has been brought alongside the yard to have her 12-inch guns mounted; when this has been done the ship will have all her armament in place.

The first-class battle-ship "Amiral-Duperré" is to be shortly placed in the Second Category of the Reserve, when she will undergo a complete refit at a cost of 1,500,000 francs (£60,000); the repairs and alterations to be carried out include:—  
1. New boilers. 2. General repair of hull and engines. 3. The substitution of four 6·4-inch Q.F. guns in a central casemate for the midships 13·3-inch gun in its barbette.

With the new year will also commence work on the first-class battle-ship "Neptune," lately placed in the Second Category of the Reserve for overhaul. The estimated cost of her repairs will also amount to 1,500,000 francs (£60,000); Belleville boilers are to be substituted for the cylindrical ones, the engines are to be modified for working at high-pressure with the new boilers, and a good deal of the superstructure is to be removed.

The repairs to the second-class battle-ship "Dévastation" are now in full swing, and the ship is being pretty well pulled to pieces. She also is to receive Belleville boilers in lieu of her old cylindrical ones.

*Rochefort.*—On the 5th and 20th December, respectively, are to be launched the destroyers "Pertuisane" and "Escopette," ordered on the 8th June, 1899; they are the first two vessels of this type constructed at Rochefort. Their dimensions are:—Displacement, 303 tons; length, 56 metres (183·7 feet); beam, 5·94 metres (19 feet); they will be fitted with vertical triple-expansion engines, with propellers and water-tube boilers, and are to have a speed of 26 knots. They are armed with one 65-millimetre (2·5-inch) and six 47-millimetre (1·4-inch) Q.F. guns, and two torpedo-tubes. They will be manned with crews of four officers and forty-four men, and cost each 1,722,675 francs (£68,907).

The Minister of Marine visited the submarine boat "Gustave Zédé" at Cherbourg when the combined Mediterranean and Channel Squadrons were lying at Cherbourg. He went on board her, accompanied by Rear-Admiral Biénaimé, Chief of the Staff at the Ministry of Marine, and other officers. The boat took nine minutes to submerge, but it is said it can be done more quickly when she is in motion. When submerged only a flag at each end and the tube of the periscope in the centre were left visible. The "Gustave Zédé" made the round of the ships in the roadstead, being kept at a uniform depth during the run, the speed being 9 knots. During the run one torpedo was discharged. Before returning to the harbour, owing to the supply of oxygen being exhausted, the boat had to come to the surface; but on the whole the Minister expressed himself pleased with the performance. It is reported that the Minister of Marine, as the result of his trip, has decided to appoint a Committee to consider the whole question of submarine or submersible boats.

The following *précis* of "Lettres sur la Marine Allemande," by M. Ed. Lockroy, formerly French Minister of Marine, which were published in the *Temps* during September and October, 1900, will, we think, be read with interest:—

## I.

"An hour after my arrival at Berlin I proceeded to the Reichsmarineamt, having obtained the necessary permission to visit all the naval establishments through our Ambassador, the Marquis de Noailles. As German officers have freely visited Toulon and Brest, a simple civilian may be permitted to visit Danzig, Riel, and Wilhelmshaven, and it is right that I should say that everywhere I have met with a most courteous and considerate reception, not even the most distant allusion to politics having been made in my presence, and in all the conversation I have had with the authorities no word has been uttered that did not concern those technical questions which it has been said can unite all those who occupy themselves with the great problems on the sea.

The Reichsmarineamt is installed in a building differing little from others near by, and has an inner quadrangle planted with trees. The interior, like that of all German Government offices, is scrupulously and dazzlingly clean. This is the only luxury, there are no carpets, no unnecessary furniture, no pictures, no hangings, only what is required for actual business, tables and chairs of pitch-pine, clean plain wall papers, everywhere light and air. On large stands models of the most recent battle-ships are displayed, among them that of the "Friedrich der Grosse"; though of tonnage inferior to those now building in France and built in England, these ships are heavily armed with four guns of 240 millimetres (9·4 inches) mounted in pairs in two turrets forward and aft, and sixteen guns of 154 millimetres (6 inches) matching ours of 164 millimetres (6·4 inches). On the broadside with as large an angle of training as possible, also a considerable number of smaller guns of 47 millimetres (1·8 inches) dispersed about the deck, all these vessels have bilge keels, which ours have not yet been provided with; these keels tend to lessen considerably the rolling, giving a steadier platform, and consequently greater accuracy of fire. Each battle-ship carries among her boats a torpedo-boat a little larger than those we have given to our torpedo dépôt-ship "Foudre." These boats steam 12 knots, and are probably destined to be lowered before an action to be ready to act at the psychological moment. Such an arrangement does not exist in France, nor, I believe, in England; it is a matter for study. Like ourselves, and before us, the English built a kind of foster-mother vessel of high speed to accompany a fleet, carrying a nest of torpedo-boats; latterly they have given up this idea; perhaps the German solution of the problem is simpler and better.

The Reichsmarineamt, in common with the rest of the Admiralty, was re-organised barely a year ago.

After the events of 1871 and the proclamation of the Empire there was created in place of the Prussian Ministry of Marine the Imperial Admiraltät, the organisation being approximately the same; it was the period of uncertainty when as yet clear and definite views as to the maritime future of Germany had not been formed. It was only in 1889 that Admiral von der Goltz, beginning to seriously apply the principle of division of labour, separated the administration of the Navy and created the two distinct services of Oberkommando and Reichsmarineamt. To the first he relegated all questions concerning national defence, the command of the fleet and *personnel* of the Navy, strategy, and the instruction of officers and men; to the second was apportioned all purely technical questions; a vice-admiral was placed at the head of the Oberkommando, and a rear-admiral at the Reichsmarineamt. One section only formed a link between these two branches of the administration, somewhat similar to our fourth section of the naval staff. Von der Goltz thus realised at a single stroke what we have so long attempted to create in France—the separation of the actual completed fleet from the fleet in course of construction, or of the active fleet from the dock-yards. Such a disposition is relatively simple to arrive at when a clean sweep has

been made and everything has to be created from the beginning, but is singularly difficult, on the other hand, when, as in France, it is necessary to remodel ancient institutions and break with old traditions. New industries have always this advantage over old, that they can start with the benefit of the very latest ideas and inventions that progress has devised ; it is the same with new Navies, nothing hampers the development of their strength and the expansion of their youth.

Notwithstanding the apparent perfection of the new naval machinery, it was found as time went on that friction ensued between the two departments, and, as in Germany, when a reform is considered necessary, it is rapidly accomplished, so on 7th March, 1893, an Imperial decree was promulgated abolishing the Oberkommando, creating in its place the Admiralstab, increasing the power of the Reichsmarineamt, and finally placing the Navy directly under the command of the Emperor, assisted by his military cabinet.

It was a revolution. At the head of the Oberkommando had been placed an officer whose brilliant and long services made him a favourite with the country, Admiral von Knorr. Still young, since he had only reached the age of fifty-nine, Admiral von Knorr had entered the Service at the age of fourteen. He had taken part in the corvette "Danzig" in the expedition against the Riff pirates; as a lieutenant, in 1870, he commanded the "Meteor" in her action with the French aviso "Bouvet" off Havana. He became a Rear-Admiral in 1883, a Vice-Admiral in 1889, and Admiral in 1893, and was considered to have a better acquaintance with the wants of the Service than any other officer, and to be the most capable man for organising the new fleet of the Empire. He held the appointment of Oberkommandant, that is to say Commander-in-Chief, of the German Navy; nevertheless he was suddenly and unexpectedly placed on the retired list, and the Oberkommandant disappeared with the Oberkommando. It is the fate of all German officers, who, for one reason or another, quit the Service—their names are hardly remembered ; it would seem as if they had disappeared from the world, as if while still living they were dead.

The re-organisation of the administration was, perhaps, not the sole reason for this disgrace. It is said that Admiral von Knorr was much attached to the ideas and tactics of the old Navy, of which the Emperor has often shown himself the opponent. A disagreement had taken place, it is said, between him and his Sovereign regarding the instruction of the junior officers. Admiral von Knorr wished the cadets to spend two years at sea before going to the Naval College on shore. He also more especially objected to the abolition of masts and yards in training-ships, considering, like many of our admirals, that although navigation is no longer performed under sail, it is, nevertheless, sailing seamanship alone which can develop the true seaman. Possibly it was the firmness with which he held to his views that caused his fall ; anyway, the fact remains that notwithstanding his fine constitution, his services, and his long experience, he was obliged to retire into private life.

The decree by which the German Emperor announced the new organisation is characteristic :—

"Having," he said, "decided to assume the active command of the Navy, as I have up to the present that of the Army, I have judged it no longer necessary to retain between myself and the various superior officers, a special central authority, which would have no other duty than that of transmitting my orders ; in consequence I direct as follows :—That the special branch entitled Oberkommando is abolished."

It is thus that was accomplished in a few days—one might say in a few hours—the administrative and military revolution which for the second time has completely altered the conditions of the superior command of the Navy. If the new system should not be found perfect, and if, as is possible, friction should ensue between the Marine Cabinet and the Admiralstab it will be as unhesitatingly re-organised *de novo*.

## II.

In speaking of the German Navy one must speak of the Emperor, not only because he is its chief, but also because he hopes to see it the most powerful in Europe. To him is great measure due the progress already effected; he pursues the execution of his plans with a tenacity which nothing tires; the history of his struggle with the Reichstag is well known—victory will certainly be his; at the last discussion he was refused the squadron of cruisers for distant waters which figured in his programme: the events in China will furnish him with a pretext for showing its necessity.

His great activity keeps Germany constantly on the point of expectation. In the way in which he forces the fleet on the country there is a sort of moral violence; his will rests as a yoke on Ministers, on Members of Parliament, and on the people—he gives no rest to either one or the other. At one moment he is engaged in drawing up a long memorandum wherein he demonstrates the urgency for a real naval defence; at another he himself sketches the outline of the war-ships of Europe, that everyone may be penetrated with the necessity for repairing the weakness of the Imperial squadrons. He has given orders for torpedo flotillas to ascend the great rivers anchoring off the different inland towns, and hopes in this way to awaken curiosity and interest the people in naval affairs; he is also sending models of battle-ships and cruisers from town to town, and a competent lecturer accompanies this travelling naval museum, who explains the complexity of modern naval engineering, the different types of vessels and their rôle in action to crowded audiences attracted by the novelty of the idea; possible wars are discussed and the dangers put before the country, showing the interest it should feel in protecting its commerce, and the Imperial need of modern Germany for a powerful fleet. Little by little these diverse means of propaganda are acting strongly on public opinion. A maritime league has been formed which already numbers over 200,000 members; the country from end to end has become passionately eager about the future of its Navy—the fever of the Emperor has been communicated to the Empire.

To assist him in this work, the Emperor has surrounded himself with young admirals as ambitious as he himself is to see Germany play a great part at sea. First and foremost amongst these is Rear-Admiral Freiherr von Senden-Bibran, chief of the Cabinet, reported to be a most able man; also Vice-Admiral Bendemann, formerly director of a section of the Oberkommando, and now charged with all the preparations for war<sup>1</sup>; Admiral von Koester, military commandant of Kiel and Inspector-General of the Navy. The office of Admiral von Koester does not exist in France, or, rather, it is exercised by several admirals without any real power. This appointment is essentially a non-permanent one, in the gift and at the discretion of the Emperor for an indefinite period. Von Koester's duties are confined to questions concerning the *personnel* and mobilisation; all purely technical questions are dealt with by the Reichsmarineamt.

Lastly, the Emperor has also still at his side Rear-Admiral Tirpitz, Chief of the Reichsmarineamt, looked upon as the real renovator of the Navy. In contradistinction to Admiral von Koester, Rear-Admiral Tirpitz does not speak French. He is a man of great force of will, and does not dissimulate his thoughts. When the discussion on the Navy came before the Chamber he did not hesitate to say that Germany must face the possibility of a war with "the greatest maritime Power of Europe." His outspoken words and far-seeing views contribute not a little towards the carrying out of the vote.

Admiral Tirpitz leads the Members of Parliament in the same manner as he would his ship's company; recently he ordered the commencement of a new cruiser without troubling to obtain the sanction of the Chamber. Questioned on the subject, he replied that having signed the contract before iron and steel had risen to their present price, he ought rather to be thanked for realising a considerable economy. The docile Reichstag tried to believe that he had foreseen the rise in the price of materials two years previously.

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<sup>1</sup> Now Commander-in-Chief of German fleet in China.—ED.

The great military writers of Germany—von der Goltz, von Janson, von Boguslawski, and Verdy du Vernois—assist with their pens the maritime projects of the Emperor. They have undertaken a campaign in support of the cry for the augmentation of the fleet, carrying it on with so much talent that a deep impression has been made on public opinion. Von der Goltz, developing the ideas of Rear-Admiral Tirpitz, has openly faced the case of a war with England, and appears to consider it unavoidable at a no distant date. Entering into details, he has gone so far as to calculate the chances of a descent on English territory. "The distance is short," he says, "and can be easily traversed by an enterprising admiral; but war with England supposes a powerful Navy, and," he adds, "we must not lose a day in preparing for the struggle—victories are not to be improvised."

Not only from the commercial rivalry between Germany and England, a certain future cause of conflict, does von der Goltz draw his arguments, as he considers also the possibility of war with France and Russia combined; the German fleet must be able to beat successively the two fleets of its adversaries. But the chief point which all writers insist upon is the necessity for securing the food supply of the country. Should Germany be attacked simultaneously on her two frontiers, she would be unable to sustain the struggle for long if her revictualling bases were not assured. "Resistance," says von der Goltz, "is only possible for us if we can keep open our communications by sea, otherwise famine will force us to surrender." Verdy du Vernois says:—"It will be necessary to depend on importations from abroad, for we shall not be able to count on land communications." Von Janson shows that "belligerents will forbid the carriage of all provisions to neutral ports even under neutral flags"; all agree with the Emperor that Germany must have a powerful fleet.

To convince Parliament and create a further impression in the country, the Government has distributed a voluminous document among the deputies with a view to proving that, without a powerful Navy, all the present prosperity of Germany, purchased by so much bloodshed and victory, would crumble away; and to put the matter as strongly as possible, a table has been added giving careful statistics showing the political and economic condition of the Empire. It is an instructive page of contemporary history, which exposes most strikingly the prodigious rapidity with which in a few years the fortune and richness of the country have increased. After giving the rapid augmentation of the population, it shows how the Government has been able to stem the tide of emigration, the number of emigrants, which in 1885 was 171,000 for the twelve months, having fallen last year to 20,000—sure evidence that the welfare of the people has much increased. The commercial relations of Germany with the different nations of the world, classed separately as: nations with which there are only maritime relations, nations with which there are only relations by land, and nations with which relations are carried on both by land and sea, show that the seaborne commerce is no less than 70 per cent. of the whole; hence the evident necessity for protecting the mercantile marine.

All this portion of the document gives a very striking idea of the activity of the German sea-ports; in the last four years their trade with America has nearly doubled, and also with France.

The opening of the Wilhelm Canal has greatly favoured the coasting trade. The following figures sum up all this prosperity, it is estimated that in 1897 the value of Germany's commercial fleet was 290,499,960 marks, to-day it is 500,000,000 marks. As regards the ship-building yards, they have not only constructed the whole of Germany's war fleet, but have also furnished many battle-ships, cruisers, and torpedo craft to foreign nations. The Vulcan firm is prosperous, the Schichau firm is celebrated; ship-building has so increased that the number of yards, which was but seven in 1870, is to-day thirty-nine, and the number of workmen employed has increased from 2,800 to 37,750 in the same period. While ship production in Germany has increased, in England it has decreased.

England's share in the world's ship construction was 81 per cent., it has fallen to 75 per cent., Germany's share, which was but 6 per cent., has increased to 12 per cent. From all these facts there results that Germany, like France, has not a fleet in proportion to her needs, and still less in proportion to her ambitions.

During the first period of his life Prince Bismarck dreamed of the preponderance of Prussia in Germany, during the second of the preponderance of Germany in Europe, the Emperor to-day dreams of the preponderance of Germany over the whole world; the extension of the Mercantile Marine makes the extension of the Navy necessary and so has been said by Verdy du Vernois : "A nation which does not concern itself with the sea can never be great."

Besides augmenting the fleet, the Imperial Government has also decided to put the capital in direct communication with the sea, and a ship canal with a depth of 4 meters (13 feet) between Berlin and Stettin has already been commenced. Stettin, with its feverish activity, is a typical town of New Germany. Its population has increased three-fold in the last 30 years, and now numbers 250,000. Herr Zimmermann, one of the directors of the Vulcan Company of Stettin, was good enough to show me over the works. It is here that have been constructed besides big battle-ships for the German Navy, the immense steamers of the Hamburg-America and Norddeutsche Lloyd companies which cross the Atlantic at a speed of 22 knots.

Between 6,000 and 7,000 workmen are employed in these works, which extend along the banks of the River Oder. At the time of my visit there were building the "Yakumo," an armoured cruiser for Japan, another cruiser, the "Bogatyr" for Russia, a battle-ship for Germany, three steamers for the Hamburg-America company, one of which is over 200 meters (656 feet) long, and three steamers for the Norddeutsche Lloyd. The Vulcan Company also constructs annually over 100 locomotives, which serve, as it is called, for "flying work," that is, the men are put to work on them when shipbuilding is slack. The company is most successful and pays dividends of 12 to 14 per cent. to its shareholders.

What strikes one most in the appearance of the works is the methodical and simple arrangement of the whole business. To the right are the large mercantile steamers, and to the left are all the war-vessels in course of construction. At the far end the carpenters' and joiners' shops are together; next come the iron works, and, lastly, the steel. Not a single end of a plate lies out of place in the roadway, and no plank end projects untidily from the stacks of timber. By the water-side are immense cranes of 100 to 150 tons capacity, and heavily-laden trains move along the lines of rails.

At the other end of the town is the free port which the canal will put in communication with Berlin, and it is here that the Emperor, when inaugurating the commencement of the work, made use of the words "our future lies on the sea," which have re-echoed throughout the country.

It is not only the future of Germany which lies on the sea, the whole Continent no longer suffices for modern activity—the future of Europe is on the sea, the future of all civilised nations.—*Le Yacht* and *Le Temps*.

(To be continued.)

GERMANY.—The following are the principal promotions and appointments which have been made : Admiral—von Koester, General-Inspector of the Navy and Commander-in-Chief of the Baltic Station, to the command of the Grand Manoeuvre Squadron of 1901. Vice-Admirals—H.R.H. Prince Henry of Prussia to command of First Squadron. Rear-Admirals—Geissler to command of First Division of First Squadron ; Fischel to be second-in-command of First Squadron ; Büchsel to be Director of the General Naval Department at the Imperial Ministry of Marine ; Kirchhoff to be second-in-command of Cruiser Squadron ; von Frantzius to be Inspector of Second Naval Division. Kapitäns zur See—von Frantzius, Kirchhoff, Fischel to be Rear-Admirals ; Thiele (August) to "Kaiser Wilhelm III." ; Thiele (Adolph) to "Kaiser Wilhelm II." ; Scheder to be Chief

of the Staff to the North Sea Division; Holzhauer to "Victoria Louisa"; Westphal to "Freya"; Plachte to "Mars"; von Basse to command of Second Dockyard Division; Openheimer to command of Second Seamen's Division; Wodrig to be Chief of the Staff of Cruiser Squadron; Zeye to "Nymphe"; Becker to "Friedrich Karl"; von Heeringen to "Baden." Fregatten and Korvetten Kapitäns - von Heeringen, Capelle to be Kapitäns zur See; Emsmann for service at Ministry of Marine; Paschen to "Hildebrand"; Schwartzkoff to "Ægir"; Schönenfelder to "Möwe"; Grapow to "Cormoran"; Kutter for service on Headquarter Staff of the Navy; von Gotzhausen to "Jagd"; Goette to "Habicht." — *Marine Verordnungsblatt.*

Vice-Admiral H.R.H. Prince Henry of Prussia has assumed command of the First Squadron in succession to Vice-Admiral Hoffmann, and has hoisted his flag at Kiel on board the first-class battle-ship "Kaiser Wilhelm II." The squadron, as at present constituted, consists of the following ships:—

*First Division:*—

First-class battle-ships—"Kaiser Wilhelm II." (flag-ship of Commander-in-Chief), "Kaiser Friedrich III."

Second-class cruiser—"Freya."

Despatch-vessel—"Jagd."

*Second Division:*—

Third-class battle-ships—"Baden" (flag-ship of Rear-Admiral Fischel), "Württemberg," "Sachsen."

The torpedo-boat divisions in service have been reconstituted as follows:—

*First Division (Headquarters—Kiel):*—

Torpedo-boats (senior officer)—S 93, S 94, S 95, S 96, and S 98.

These boats are all of the new sea-going type, and have been built by the Schichau firm at Elbing, and they are now commissioned for service for the first time. They are 157 feet long, with a beam of 16 feet 9 inches, and a displacement of 155 tons on a draught of 8 feet 9 inches; the engines develop 2,500 I.H.P., giving a speed of 25 knots; and they carry 1 small Q.F. and a machine gun, with 3 torpedo-tubes; their coal stowage is 30 tons.

*Sixth Division (Headquarters—Wilhelmshaven):*—

Division boat—D 9.

Torpedo-boats—S 75, S 79, S 76, S 80, S 81, and S 77.

*The Reserve Division:*—

Division boat—D 5.

Torpedo-boats—S 44, S 45, S 46, S 47, S 49, and S 50.

The Coast-defence Division, consisting of six battle-ships of the "Ægir" class, has been broken up for the winter, the vessels returning to Danzig, with the exception of the "Heimdall" and "Frithjof," which remain as dépôt reserve-ships at Kiel and Wilhelmshaven respectively, the crew of the "Hildebrand" being turned over to the "Württemberg." The armoured gun-boat division, consisting of the "Natter," "Skorpion," "Krokodil" and "Mücke," has also been put out of commission at Danzig, and it is reported that all the gun-boats of this type are now to be struck off the effective list of the Navy.

The winter session for the different courses of instruction at Kiel opened on the 1st October. There is a two years' course for officers of the rank of lieutenant and upwards at the Naval Academy, the first term lasting nine and the second six months; the instructing staff consists of a rear-admiral, 6 staff officers, 6 higher officials of the Constructor's Department and 13 professors. The course for cadets for their final examination for sub-lieutenant takes place at the Naval School and lasts for six months and is in continuation of the course of instruction pursued on board the sea-going training-ships, which form an integral part of the Educational Establishments; the staff of the school consists of 27 naval and civilian instructors. There are 135 pupils this year at the Warrant Officers' School, a smaller number

than usual, the course lasts for six months; 23 naval and civilian instructors form the teaching-staff. All these schools are under the superintendence of Rear-Admiral Freiherr von Maltzahn.

In the Boys' Institute in Friedrichs-Ort for a course of advanced elementary education are 207 boys, who having completed their year's service in the sea-going training-ship, will on the completion of their present course be drafted to the seamen and torpedo divisions. Embarked at present on board the four sea-going training-ships "Charlotte," "Gneisenau," "Stosch" and "Moltke" are 197 cadets, 24 pupils for the Constructor's Department, and 1,034 boys.

*New Ships.*—There are at present four first-class battle-ships on the stocks and four more fitting out. Not yet launched are "D" at the Schichau Yard, Danzig; "E" at the Krupp Germania Yard, Kiel; "F" at the Vulcan Yard, Bredow; and "G" at the Imperial Dockyard, Wilhelmshaven. These four ships together with the "Wittelsbach" launched in July constitute a new type, being an improvement on the five ships of the "Kaiser" class. Their dimensions are as follows:—Length, 412 feet 6 inches; beam, 68 feet 3 inches, with a displacement of 11,800 tons, as against only 11,000 of the earlier ships; the engines moreover are to develop 15,000-I.H.P., giving a speed of 19 knots, as against the 13,000-I.H.P., and 18 knots of the "Kaisers." Armour protection will be afforded by a water-line belt of 9½-inch Krupp steel extending from the stem, where it tapers to 5 inches, for three-fourths the length of the ship; the turrets for the four heavy guns are protected by 10½-inch armour and those for the secondary armament with 6-inch, all the armour being hardened by Krupp's latest process. The armament will consist of four 9½-inch, eighteen 5½-inch, twelve 3½-inch, and twelve 1½-inch guns, all Q.F., with eight machine guns and six torpedo-discharges, five of which are submerged, viz., four on the broadside and one forward, while the one above water will be in the stern. The guns in the fore turret will be carried at a height of nearly 30 feet above water, and in the after turret 21½ feet. The bunker capacity is for 600 tons of coal, but special arrangements have been made for increasing this amount to 1,000 tons, when necessary. Fitting out are the "Kaiser Wilhelm der Grosse" at the Germania Yard, Kiel; the "Kaiser Karl der Grosse" at the Yard of Blohm and Voss, Hamburg; the "Kaiser Barbarossa" at the Schichau Yard at Danzig; and the "Wittelsbach" at the Imperial Dockyard, Wilhelmshaven. Of these four ships the "Kaiser Wilhelm der Grosse" should commence her trials before the end of the year, as also should have the "Kaiser Karl der Grosse," but her completion has been somewhat delayed by the strike of the workmen at Hamburg. Of the large armoured cruisers there are the "Prinz Heinrich," fitting out at Kiel, and "B" still on the stocks at the same yard; the dimensions of both ships are identical, a displacement of 8,860 tons, with engines developing 15,000-I.H.P., to give a speed of 20½ knots; "B" is to be launched next spring, while the "Prinz Heinrich" is to be ready for her trials in the early part of 1901. Of small cruisers there is one on the stocks, "E" at the Imperial Dockyard at Danzig; fitting out at the Germania Yard, Kiel, are the "Amazoné" and the "Nymphe"; while the "Thetis" is fitting out at the Imperial Dockyard, Danzig, and the "Ariadne" at the Weser Yard, Bremen. These five vessels are all of the "Gazelle" type, with a displacement of 2,645 tons, but the engines are to develop 8,000-I.H.P., instead of the 6,000-I.H.P. of the earlier vessels, which will increase the speed from 19½ knots to 22½ knots. Under construction at the Imperial Dockyard, Danzig, is the gun-boat "A," which is of the improved "Iltis" class, and will have a displacement of 895 tons; while at the Schichau Works at Elbing with the new year will be commenced three of a new type of sea-going or squadron torpedo-boats, three others being constructed at the Germania Yard; they will have a displacement of 350 tons, their engines developing 5,500-I.H.P., to give a speed of 27 knots.

*Launches.*—On 3rd July the new first-class battle-ship "Wittelsbach" was launched from the Imperial Dockyard, Wilhelmshaven. Details of the ship will

be found in the paragraph above under the heading of New Ships. She is to be ready for her trials by April, 1902. Her total cost will be £1,118,000, of which the ship and machinery will absorb £832,500; the armament will cost £250,000, and the torpedo-fittings, £35,000.

On 6th October was launched from the Germania Yard, Kiel, the new small cruiser "F," the christening ceremony being performed by H.R.H. the Hereditary Grand Duchess of Baden, the vessel receiving the name of "Amazone." Her dimensions are as follows:—Length, 325 feet; beam, 36 feet 6 inches; displacement, 2,645 tons on a draught of 16 feet 3 inches; the hull will be wood-planked and coppered. The boilers will be water-tube on a system compounded from the Thornycroft and Schultz boilers, devised at the Germania Yard. There will be a 2-inch armour deck with a cofferdam filled with cork running round the inner part of the ship at the water-line; great pains have been taken to make the mess-deck for the men as roomy and airy as possible, the ship being intended for service in the tropics. The coal stowage will be 500 tons. For so small a vessel the armament is a powerful one, viz., ten 10·5-centimetre (4·1-inch), fourteen 1½-pounders, eight machine guns, two above-water broadside torpedo-tubes, and one under-water in the stem.

*Launching Ceremonies.*—The Kaiser has issued the following regulations as to the ceremonies to be observed at the launching of ships for the Imperial Navy:—  
1. I shall myself always name who is to perform the christening ceremony of one of my ships. 2. A guard of honour, one company strong, with band and colours, is to be in attendance. 3. The guard is to be detailed, in the Imperial Naval harbours from the Marine Infantry, otherwise from the troops of the garrison; I reserve to myself the selection of the troops to take part in the ceremony. 4. During the actual launch itself the guard will present arms and the band play the National Anthem. At launches, when I am myself present, my ships lying in the harbour are to fire a salute of 21 guns. As the ship enters the water three hurrahs are to be given. 5. Where ships are merely floated or towed out of dock, the honours are to be paid at the conclusion of the religious service, concluding with the National Anthem. 6. Officers off duty and deputations from the fleet and garrison are to attend the ceremony. The time and place where the deputations will parade, as well as their strength, will be settled by the Naval Commander-in-Chief at the naval stations, and at other ports by the Military Commandant. 7. The dress for naval officers to be undress with decorations; for the men, parade uniform. For military officers, undress; soldiers, parade uniform. 8. As far as circumstances will permit, the public may be permitted to be present at the ceremony.

*Steam Trials.*—The coast-defence battle-ship "Hagen," which has been lengthened amidships 25 feet, has completed her steam trials successfully; among other alterations, eight Thornycroft water-tube boilers have been substituted for the four locomotive boilers originally placed in the ship, the result being to increase the I.H.P. by 400, which, under forced draught, has increased the speed of the ship from 14·8 knots to 15·5 knots, an increase of three-quarters of a knot, while the size of the coal bunkers has been nearly doubled, so that at 10 knots speed the ship now has a radius of action of 3,200 miles instead of 1,500 miles as formerly; moreover, two additional 16-pounder Q.F. guns have been added to the armament, while the accommodation for both officers and men has been much improved.

The new second-class cruiser "Freya" has commenced her trials; the ship is fitted with French water-tube boilers on the Niclausse system, but the first full-speed trial was not very successful, the ship only making 18 knots instead of the 19 knots contracted for. The tubes seem to have become choked very rapidly and in other ways the boilers have proved themselves unsatisfactory, and no further experiments are to be made with them.

The new small cruiser "Nymphe" has been carrying out her trials off Kiel, with the engines making 158 revolutions, and developing a little over 9,000-I.H.P., a speed of 22·3 knots was attained, showing a vast improvement over the "Gazelle," the first ship of the class, whose maximum speed is only 19 knots. The "Nymphe" is fitted with Schultz water-tube boilers, and the estimated speed was to be 21·5 knots.

The new second-class cruiser "Victoria Louise" has been undergoing her trials successfully; with the engines developing 10,000-I.H.P. she maintained a mean speed of 18·5 knots; she is fitted with water-tube boilers of the Dürr type.

*In the Dockyards :—*

*Wilhelmshaven.*—A sum of 1,000,000 marks (£50,000), out of a total of 30,000,000 marks £1,500,000) required, is to be expended during the coming year on the new works for this yard. It has long been recognised that an extension of this dockyard was inevitable, in view of its position, which makes it the most important *point d'appui* for our fleet in the North Sea. The accommodation in the yard, which was projected and carried out at a time when such a development of the fleet as is now taking place was certainly never contemplated, hardly sufficed even ten years ago for the needs of the fleet. Among other improvements now to be carried out is a third entrance to the military harbour; the original entrance, completed in 1870, will now not allow of the passage of any large ships, while the second entrance, made a few years back, will only allow of ships entering at high water, which, in war-time, would be a serious matter, if the greater part of the ships of a squadron could neither enter nor leave the harbour except under a delay of several hours. A third entrance, available at all times of the tide, has therefore become a strategical necessity of the first importance. It is also necessary to construct a new fitting-out basin with the accompanying workshops. The land for the extension of the dockyard was secured some time ago and adjoins where the new dry docks are under construction.

*Kiel.*—The work on the two new dry docks under construction at this yard is being energetically pushed on. The bottom of the docks, which is made of 16-foot deep concrete blocks, is completed. As much of the work is being carried out under water, this completion of the bottom is a matter of some importance, and has been accomplished up to the present without any accident. It is now reported that the Reichstag is to be asked to sanction the construction of a third new dock. No new land will be required for this, as the necessary ground is already in the hands of the dockyard authorities.

A great change is impending in the working of the different engines and machines in the yard, as electricity is about to be substituted for steam. For some time past electricity as the motive power has been in use in some of the smaller shops, and has proved so successful that it is now to be applied to the whole yard, every machine and engine, including the great pumping dock engines, are to be driven by it in future.

The value of the Kaiser Wilhelm Canal is being proved more and more every year as a convenient and safe means of communication between Kiel and Wilhelmshaven, as, in spite of their increased sizes, even the largest battle-ships can pass through without any difficulty. During the last four years no fewer than 2,000 passages through the canal have been made by German war-ships.

Considerable progress is being made with the new first-class armoured cruiser "Prinz Heinrich"; her main engines are being set up and the armour fixed on her turrets. The repairs to the boilers of the torpedo school-ship "Blücher" are also being pressed on, so that the ship may be able to resume her duties in the early spring. The work on the new first-class battle-ship "Kaiser Wilhelm der Grosse" is also making good progress. The heavy turret guns have been mounted, the two military masts are in place, while the whole of the armour has now been fixed. The engines are completed and the boilers nearly ready; as soon as the work on them is finished the ship will be practically ready to begin her trials.

The torpedo-boat flotilla has much outgrown the accommodation in the harbour; there are two stations for these vessels, one adjoining the dockyard, where the boats coal and have slight defects made good; the second is the only proper torpedo-boat haven, and here lie the two barrack-ships "Hansa" and "Prince Adalbert," on board which are berthed 371 and 461 men respectively, who form the crews of the first torpedo section. Further accommodation is now required, and it is proposed to construct a torpedo-boat harbour to the south of the Holtenau mouth of the Kaiser Wilhelm Canal, where berths will be found for from 70 to 80 torpedo-vessels, while barracks will be built on the adjoining land for the increased personnel, the two present dépôt-ships being done away with.

*The Naval Manœuvres.*—Admiral von Koester had been selected as usual for the command of the Grand Manœuvre Squadron, but in consequence of the despatch of the First Division of the First Squadron, consisting of the battle-ships "Kurfürst Friedrich Wilhelm," "Brandenburg," "Weissenburg," and "Wörth," with the armoured cruiser "Fürst Bismarck" and some smaller vessels, to China, the arrangements were somewhat altered, as the fleet had to be reconstituted, owing to the great diminution in its strength. Admiral von Koester did not assume the command, which was left in the hands of Vice-Admiral Hoffmann, the Commander-in-Chief of the First Squadron, who had Kapitän zur See Breusing as his Chief of the Staff. The fleet was formed as follows:—

*The First Squadron:—*

First-class battle-ships—"Kaiser Wilhelm II." (flag-ship of Commander-in-Chief), "Kaiser Friedrich III."

Third-class battle-ships—"Sachsen," "Württemberg."

First torpedo-boat flotilla—D 9, pennant of senior officer, Korvetten-Kapitän Koch.

*First Division A:—*

Division-boat—D 7.

Torpedo-boats—Nos. S 68, 69, 70, 71, 72, 73.

*Second Division B:—*

Torpedo-boat—D 5.

Torpedo-boats—Nos. S 44, 45, 47, 50, 52, 57.

*Second Squadron, under command of Rear-Admiral von Arnim.*

*First Division:—*

Fourth-class battle-ships—"Ægir" (flag-ship), "Odin," "Heimdall."

*Second Division.—Rear-Admiral Freiherr von Bodenhausen:—*

Fourth-class battle-ships—"Hildebrand" (flag-ship), "Frithjof," "Siegfried."

Second torpedo-boat flotilla.

*Third Division C:—*

Division-boat—D 10.

Torpedo-boats—Nos. S 93, 94.

*Fourth Division D:—*

Division-boat—D 8.

Torpedo-boats—Nos. S 58, 59, 61, 62, 63, 65.

*Scouting Division:—*

Third-class cruisers—"Jagd," "Blitz," "Greif," "Pfeil."

Torpedo-dépôt-ship—"Pelikan."

Training-ship—"Grille."

Towards the end of the manœuvres the fleet was strengthened by the gunnery and torpedo-training-ships "Mars," "Carola," "Friedrich Karl," and the armoured gun-boat division, consisting of the "Skorpion," "Natter," "Mücke," and "Krokodil."—*Neue Preussische Kreuz-Zeitung* and *Mittheilungen aus dem Gebiete des Seewesens.*

The following *résumé* of the operations appeared in the *Times*:—"The first part of the manœuvres took place in the North Sea, the second in the Baltic. The earlier portion of the programme consisted of inspection, drill, etc.; after a day in Wilhelmshaven, the tactical exercises were begun, varied by attacks of the torpedo-boats at night. The latter seem to have been frequently successful, but it must be remembered that the position of the force to be attacked was probably communicated to the attackers or, at any rate, very easily discoverable. On 23rd August the mouth of the Jade was found to be defended by a field of mines at a distance of seven miles from Wilhelmshaven. Torpedo-boats were detailed to remove them, and the defence was undertaken by boats manned by naval artillerists, with what result it is not stated. The fleet then put into Wilhelmshaven and coaled. The next event was an attack on Cuxhaven; on the afternoon of the 24th two torpedo-boats were observed endeavouring to steal into the harbour under cover of a chance steamer—a device somewhat useless in the case of war—and repelled, one being disabled. At midnight the fleet itself attacked, and cannonaded the forts, which replied. The following day saw the start for the Baltic. Off Skagen the "Kaiser Friedrich III." was told off to do duty as a cruiser and lead the torpedo-boats to the attack of the First Squadron. In semi-darkness the boats mistook the "Kaiser Wilhelm II." for their consort, and gave the private signal; they seem to have been driven off, and failed to find the remainder of the First Squadron, which was out of sight. The fleet advanced through the Belt in scouting formation; in the evening the two ships of the "Kaiser" class endeavoured to pass the line unperceived; they separated, and in the end only one was detected. The operation was, however, naturally of a rather unreal character. In time of war no commander would dream of dividing his forces for such a purpose, especially at night in the face of an enemy of unknown force. After some further evolutions, varied by torpedo-boat attacks, the fleet put into Neufahrwasser to coal and renew boiler water.

The period from 3rd September to 8th September was occupied with tactical exercises in the eastern Baltic. A move was then made to Swinemünde, where the officers took part in the parade of the Army before the Emperor. The 10th and 11th September were occupied with further tactical exercises in Stettin Bay, and the three following days saw the concluding strategical manœuvres. The general idea of these was "Germany is at war with a Power superior at sea." The special idea was "a hostile fleet, coming from the east, intends to land troops on the Island of Rügen. Stettin and Swinemünde are besieged. The hostile fleet has to silence the sea defences of Swinemünde. The German fleet has the task of interrupting or preventing these operations." In addition to the ships already mentioned, the training-ships the "Mars," the "Carola," and the "Friedrich Karl," together with four antiquated gun-boats, now joined the fleet, which was divided into two sides, the German and the "Yellow," the "Kaiser Wilhelm II.," being the umpire's (Vice-Admiral Hoffmann's) ship, was neutral; the four gun-boats and the "Odin" were detached to strengthen the sea defences of Swinemünde; the remainder so distributed that the German fleet was weaker both numerically and as a fighting force. The German admiral disposed his forces on either side of Bornholm to prevent the passage of the "Yellow" fleet. The latter attempted the southern side on the morning of 13th September, and though the German admiral succeeded in concentrating his forces, in the short space of two hours the enemy forced the passage with the loss of two ships. The "Yellow" leader then sent his transports on, his primary object being, of course, to secure the landing; the battle-ships then kept the pursuing German fleet at bay, and in the course of the operations succeeded in disabling several cruisers. On nearing the coast of Rügen the "Yellow" leader ordered an attack on Sassnitz, to secure possession of the railway. Meanwhile the "Kaiser Friedrich III." and the "Frithjof," in attempting to prevent the landing of troops, engaged four ships of the nominal value of the "Kaiser" class. The "Frithjof" was soon disabled,

and the "Kaiser Friedrich" had to withdraw so far disabled that her speed was limited to 5 knots for the next five hours instead of the maximum of 11 knots which was laid down for the battle-ships. This loss of speed passed unnoticed by the "Yellow" ships, however, which rejoined their own forces without attempting to capture their disabled adversary. The troops were then landed without opposition. It was now so late that a bombardment of Swinemünde was hardly possible; the "Yellow" fleet, therefore, weighed anchor after repairing damages, and remained all night under steam in expectation of an attack, which did not take place. Early the following morning the "Yellow" fleet advanced to the bombardment in line abreast. Changing course eight points to starboard before coming within range of the forts, they found themselves attacked from the sea side by the German fleet; the "Yellow" leader, however, trusting in his superior strength, continued his attack on the forts, and succeeded in putting two of the gun-boats out of action. Thereupon the "Odin," with even less prospect of success than the Spaniards at Santiago, made a despairing effort to escape and join the German fleet outside, but was, naturally, quickly put out of action, as were also the two remaining gun-boats. While the "Yellow" fleet further to the east was engaging the forts, a second attempt at escape was made, this time by a torpedo-boat, which, having secured a good start, successfully showed its heels to the pursuer. The forts were now left to fight the enemy alone; what the result would have been it is difficult to say in the absence of detailed information. The aims of the operation having, however, been attained, the signal for the close of the operations was given.

As in the previous year, the final operations involved a great deal of "make-believe"; there is thus a certain air of unreality about them. The maximum speed for battle-ships was exceedingly low, and, as has been already stated, large cruisers were conspicuous by their absence. The German commander seems to have made no attempt to harass the enemy with his torpedo-boats, even on the night of 13th September, and nothing seems to have been done by the German cruisers to stop the transports when they had forced the passage. If the German fleet was so strong, as it must have been *ex hypothesi*, as to be able to watch both sides of Bornholm, it is clear that a few cruisers might well have been kept back for this purpose. Again, the "Yellow" fleet, even after losing two ships to the German three or four, cannot well have been so superior as to be able to risk an engagement with forts and fleet at once. The unreal element in the operations seems on the whole to have been too prominent for any lessons of great value to be drawn from them, at any rate by those who were not in a position to follow the strategy from inside."

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JAPAN.—*Launch*.—The new first-class battle-ship "Mikasa" launched from Vickers, Sons & Maxim's Shipbuilding Yard, at Barrow-in-Furness, on the 8th November, is, roughly speaking, a sister ship to the "Asahi" and "Hatsuse," which vessels she closely follows in the matter of displacement, dimensions, and armament, though there are important divergencies which tend to make her of special interest. Her dimensions are as follows:—Length between perpendiculars, 400 feet, the overall length being 432 feet; beam, 76 feet; and a draught of 27 feet 2 inches her displacement is about 15,150 tons.

The engines will develop 15,000-H.P., calculated to obtain a speed of 18 knots. Her normal coal supply will be 700 tons, with capacity for 1,400 tons, which will allow of her travelling about 9,000 miles at a speed of 10 knots before replenishing her bunkers. The engines will be of the triple-expansion type with three cylinders, and there will be twenty-five Belleville boilers, with economisers fitted to each.

The "Mikasa" is protected by a complete armour belt consisting of Harveyized nickel steel of Vickers' manufacture, of 9 inches thickness over a space of 156 feet

amidships, covering the vital portions of the vessel; this is continued forward and aft by armour tapering from 7 to 4 inches, terminated at the after end by a 6-inch bulkhead; thus forming a complete protection over the entire water-line of the ship. The belt extends from 5 feet 3 inches below the water-line to 2 feet 6 inches above, and is there met by the 6-inch citadel armour which continues the protection from the top of the belt to the upper deck. The citadel comprises the chief departure from ordinary practice in the design of this ship, as besides protecting the space between the belt and the main deck battery, it takes the place of the ordinary arrangement of casemates usually found in British and foreign battle-ships, and entirely protects the 6-inch guns on the fighting deck. The advantage of this arrangement over casemates will be seen when it is considered that throughout the whole of the centre portion of the ship the crew are protected from injury when working the guns, while the gun positions themselves are equally protected in front as in the casemate arrangement, and are infinitely less vulnerable in the rear, which are protected now by the 6-inch armour on the opposite side of the ship as well as by the thick steel bulkheads which divide the gun positions one from another. The conning-tower is protected by 14-inch and the observer tower aft by 3-inch armour. In addition to the above protection there is a protective deck below the main deck, which extends throughout the whole length of the ship, and consists of 2-inch armour on the flats and 3-inch on the slopes.

The heavy armament is represented by four 12-inch breech-loading guns, mounted in pairs forward and aft. These are placed in armoured barbettes 14 inches thick above the upper deck, and 10 inches thick below, where they are covered by the screen bulkhead. The heavy quick-firing armament is composed of fourteen 6-inch guns, ten of them mounted in the armoured citadel above described, and four of them mounted on the upper deck in casemates. In addition to these there are twenty 12-pounders, eight 3 pounders, and four 2½-pounders, all Q.F. guns; and the torpedo equipment consists of four submerged tubes, two forward and two aft.

The weight of metal discharged by this armament in one minute is 11½ tons, representing a striking energy of 1,337,130 foot-tons, while the weight of metal discharged from the guns available on one broadside in a minute is 7½ tons, giving a striking energy of just under 1,000,000 foot-tons.

The ship is divided very thoroughly by water-tight compartments, thus giving her all possible protection against submarine attack or accident.

The "Mikasa" is the second battle-ship launched from the Vickers Yard during the past two years, and is the forty-seventh war-ship built at the Naval Construction Works. From the above figures it will be seen that when completed for sea she will be the largest and most powerful battle-ship afloat.

*—Data supplied by Messrs. Vickers, Sons & Maxim.*

## MILITARY NOTES.

### PRINCIPAL APPOINTMENTS AND PROMOTIONS FOR NOVEMBER, 1900.

Lieut.-Colonel M. W. Saunders from R.A. to be an A.A.G. for Royal Artillery in India, and to have the substantive rank of Colonel in the Army.

*China Expedition*.—Colonel (local Lieut.-General) Sir A. Gaselee, K.C.B., I.S.C., A.D.C., to command the Expedition. Colonel E. G. Barrow, C.B., I.S.C., to be D.A.G. Colonel J. T. B. Bookey, I.M.S., to be P.M.O. Colonel (temporary Brigadier-General) H. Pipon, C.B., R.A., to be Colonel on the Staff for Royal Artillery. Lieut.-Colonel and Brevet Colonel W. T. Shone, C.B., D.S.O., R.E., to be Colonel on the Staff for Royal Engineers. Colonel (local Major-General) Sir N. R. Stewart, Bart., I.S.C., to command 1st Infantry Brigade. Colonel (local Major-General) O'M. Creagh, V.C., I.S.C., to command 2nd Infantry Brigade. Colonel (local Major-General) A. J. F. Reid, C.B., I.S.C., to command 3rd Infantry Brigade. Colonel (local Major-General) J. T. Cummins, D.S.O., I.S.C., to command 4th Infantry Brigade. Colonel (local Major-General) G. L. R. Richardson, C.B., C.I.E., I.S.C., to command the Cavalry Brigade. Colonel (local Major-General) L. R. H. D. Campbell, I.S.C., to command the Lines of Communication and Base.

Lieut.-Colonel G. D. C. Gastrell, I.S.C., to be Colonel. Lieut.-Colonel R. W. P. Robertson, R.G.A., to be Colonel. Lieut.-Colonel H. V. Hunt, R.F.A., to be Colonel. Lieut.-Colonel and Brevet Colonel E. Balfé, I.S.C., Judge-Advocate-General in India, is granted the substantive rank of Colonel in the Army. Major-General A. Walker, C.S.I., to be Colonel Commandant Royal Artillery. Lieut.-Colonel C. Haggard, h.p., to be Colonel. Lieut.-Colonel E. S. Evans (the Royal Munster Fusiliers), to be Colonel. Colonel J. F. Supple, R.A.M.C., is granted the local rank of Surgeon-General whilst P.M.O. at the Base, Cape Town. Colonel T. J. Gallwey, M.D., C.B., is granted the local rank of Surgeon-General whilst P.M.O., Natal. Lieut.-Colonel R. C. G. Mayne, C.B., I.S.C., to be an A.D.C. to the Queen and to have the brevet rank of Colonel. Lieut.-Colonel G. C. Kitson, from Commandant of the R.M.C., Kingston, Canada, to be a Military Attaché and to have the substantive rank of Colonel in the Army. Colonel A. W. Morris, Commandant, Durban, to be a Colonel on the Staff. Colonel J. M. Gordon (South Australian Military Forces), is graded as an A.A.G. Lieut.-Colonel H. S. Wheatley, I.S.C., to be Colonel. Major-General H. R. Abadie, C.B., to command the troops in Jersey whilst Lieut.-Governor in that island. Colonel E. R. Courtenay from 10th Regimental District to be an A.A.G. Lieut.-Colonel and Brevet Colonel J. Reeves, the Princess Victoria's (Royal Irish Fusiliers), is graded as a Colonel on the Staff whilst commanding the Eastern Line of Communication, East of Dalmanutha. Lieut.-Colonel L. Anstruther Hope, C.B., A.S.C., to be Colonel. Lieut.-Colonel R. W. Mapleton, M.B., R.A.M.C., is granted the local rank of Colonel whilst P.M.O. of a Division in South Africa. Lieut.-Colonel A. H. Coles, D.S.O., is granted the local rank of Colonel whilst employed as Commandant of the Uganda Rifles. General Sir Mark Walker, K.C.B., V.C., to be Colonel of the Sherwood Foresters (Derbyshire Regiment). Lieut.-Colonel A. L. Woodland, h.p., to be Colonel. Lieut.-Colonel W. Dunne, A.S.C., to be Colonel. Lieut.-Colonel (temporary Colonel) C. Crutchley, now temporary A.A.G. for Recruiting at Head Quarters, is confirmed in that appointment and is granted the substantive rank of Colonel in the Army. Lieut.-Colonel H. C. Savage (the South Staffordshire Regiment), to be Colonel.

**HOME.—Second Supplementary Army Estimate, 1900-1901.**—I. Estimate of the further amount required in the year ending 31st March, 1901, to meet additional expenditure due to the war in South Africa, and to affairs in China, £16,000,000.

II.—Votes and sub-heads of the Army Estimates under which this Vote will be accounted for.

	£	£
<i>Vote 6.—Transport and Remounts.</i>		
B.—Land and Inland Water Transport, Colonies .....	2,500,000	
C.—Sea Transport .....	1,300,000	
D.—Purchase of Remounts .....	1,500,000	
		<u>5,300,000</u>
<i>Vote 7.—Provisions, Forage, and other Supplies.</i>		
A.—Cost of Provisions, and Allowances in lieu .....	2,500,000	
B.—Cost of Forage and Allowances in lieu, Pailleasse Straw, and Stable Allowance .....	1,400,000	
C.—Cost of Fuel and Light and Allowances in lieu .....	50,000	
D.—Field Allowances .....	100,000	
G.—Colonial Allowances .....	200,000	
		<u>4,250,000</u>
<i>Vote 8.—Clothing Establishments and Services.</i>		
D.—Wages of Clothing Establishments and at Regiments .....	50,000	
E.—Contracts for making Clothing .....	100,000	
G.—Manufactured Articles of Clothing, etc., bought ready made .....	570,000	
K.—Packing expenses of Clothing .....	20,000	
O.—Wages of Clothing Factory .....	10,000	
		<u>750,000</u>
<i>Vote 9.—Warlike and other Stores.</i>		
A.—Pay, etc., of Civilian Staff and Wages of Army Ordnance Department .....	200,000	
C.—Ammunition .....	1,050,000	
F.—Miscellaneous Services .....	50,000	
G.—Equipment Stores .....	2,750,000	
H.—Barrack, Hospital, and Prison Stores .....	650,000	
		<u>4,700,000</u>
<i>Vote 10.—Works, Buildings, and Repairs, etc.</i>		
Z.—Repairs to Railways, etc., in South Africa, damaged in consequence of the War .....	—	<u>1,000,000</u>
General total .....	<u>£</u>	<u>16,000,000</u>

**Note.**—The Estimate includes provision for the newly-raised South African Constabulary. The adjustment between Imperial and Colonial Revenues of the charge in respect of this Force, as also of the charge for repairs, etc., to railways in South Africa, will be a matter for future settlement.

**INDIA.**—Some time ago attention was drawn to an article in a well-known French military journal, purporting to have been written by a correspondent in China, and dealing with the native troops in the China Expeditionary Force in terms the reverse of complimentary. This article was in no way peculiar; indeed it was a sample of the majority of articles which, appearing periodically in the columns of the Continental Press with the view of enlightening our neighbours on the military condition of India, are, when not hostile, frankly contemptuous. All the more surprising then is a long paper in the *Militär-Wochenblatt* by Captain von Stumm—who will be remembered in this country—entitled “The Indian Native Army,” and dealing at considerable length not only with organisation and equipment, but with the various races of which the *personnel* is composed. While confining himself mostly to a statement of facts, Captain von Stumm comments on the “simplicity and practical nature” of the Indian Articles of War, which, he says, might well be compared with those of most other Armies; and he is especially pleased with the summary courts-martial. As regards musketry training, he

says it is "particularly thorough," and points out that the comparative facility with which unpromising recruits can be got rid of is very advantageous. He approves strongly of the manner in which men and officers are brought together in the pursuit of sport of all sorts, and remarks that to the personal relations thus gained is due the success of most capable officers. In dealing with the various classes, the writer shows a marked preference for Gurkhas and Sikhs; and in regard to the former especially he compares the advantages of their phlegmatic temperament in the heat of action with the failings of the "hot-blooded races such as the French and Italians." He is of opinion, too, that of all races in India the Gurkha most closely resembles the Englishman in mental peculiarities. Of the Sikh he speaks in equally complimentary terms, and says, "He is a soldier by instinct and tradition," and "one of the best of the Oriental races." Of the Dogras he says that "the sight of a Dogra regiment on parade would delight the most critical of observers." Captain von Stumm is alive to the failings of the Pathan, which, after all, are common to so many mountaineers, but he admires him as a man and as a soldier. Of the recruiting system he speaks in the most complimentary terms, as being peculiarly well adapted to the object in view, namely, getting the best material into the ranks. Of the reliability of the Native Army as a whole, he points out that past history must encourage caution in giving an unreserved opinion; but the best answer to his mind appears to be the action of the Government in re-arming the native troops with the magazine rifle, and thereby deliberately resigning the superiority of armament of the British garrison.

*Pioneer Mail.*

SOUTH AFRICA.—The following Parliamentary paper, published by the Adjutant-General, gives the strength of garrison on 1st August, 1899. Reinforcements and casualties, etc., since, and present strength, 1st December, 1900. Non-commissioned officers and men only:—

—	Cavalry	Artill'ry	Infantry and Mounted Infantry.	Others.	Total.
I. Garrison on 1st August, 1899	1,127	1,035	6,428	1,032	9,622
II. Reinforcements 1st August to 11th October, 1899 (out-break of war):—					
1. From Home ... ...	—	743	5,620	—	6,363
2. From India (some of these did not reach South Africa until after the outbreak of hostilities)	1,564	653	3,427	—	5,644
	1,564	1,396	9,047	—	12,007
III. Further reinforcements from 11th October, 1899, to end of July, 1900:—					
Regulars—					
1. From Home & Colonies	11,003	14,145	110,292	14,347	149,787
2. From India ... ...	713	376	670	—	1,759
	11,716	14,521	110,962	14,347	151,546
Colonials—					
1. From Colonies other than South African ...	287	692	9,788	267	11,034
2. Raised in South Africa	—	—	—	—	28,932
	—	—	—	—	39,966

	Cavalry.	Artill'ry.	Infantry and Mounted Infantry.	Others.	Total.
Imperial Yeomanry... ...	—	—	—	—	10,195
Volunteers from United Kingdom ... ...	—	358	9,995	434	10,787
Militia ... ...	—	617	19,753	256	20,626
Total all arms sent to South Africa up to 1st August, 1900, including garrison on 1st August, 1899 ... ...	—	—	—	—	254,749
IV. Further reinforcements from 1st August to 30th Nov., 1900:—					
1. Regulars ... ...	1,449	464	9,055	610	11,578
2. Militia ... ...	—	—	984	—	984
Total all arms sent to South Africa up to 1st December, 1900, including garrison on 1st August, 1900 ... ...	—	—	—	—	267,311
V. Numbers:—					
1. Killed to 30th Nov., 1900	—	—	—	—	3,018
2. Wounded to 30th Nov., 1900 ...	—	—	—	—	13,886
3. Died of disease or wounds, or accidentally killed in South Africa to 30th November, 1900 ...	—	—	—	—	7,786
4. In hospital in South Africa on 2nd October, 1900 (latest returns) ...	—	—	—	—	11,927
VI. Numbers left South Africa:—					
1. For England—not invalids	—	—	—	—	7,541
2. For England—sick, wounded, and died on passage ...	—	—	—	—	35,548
3. Returned to India direct from South Africa ...	—	—	—	—	70
4. Returned to Colonies direct from South Africa:—					
a. Regulars, including two battalions to Ceylon	—	—	—	—	1,884
b. Colonials ...	—	—	—	—	1,172
VII. Present strength of Forces in South Africa, 1st December, 1900 <sup>1</sup> :—					
1. Regulars ... ...	11,600	12,700	105,300	13,293	142,893
2. Colonials ... ... say	—	—	—	—	33,000
3. Imperial Yeomanry ...	—	—	—	—	8,000
4. Volunteers ... ...	—	—	—	—	7,500
5. Militia ... ...	—	—	—	—	18,900
	—	—	—	—	210,293

<sup>1</sup> These figures do not allow for disbandment of Colonials, etc., of which precise details have not been received.

EVELYN WOOD, A.G.

FRANCE.—The *France Militaire* publishes the following extract from the report of the French Military Budget referring to the proportional retirements of officers from the French Active Army into the Reserve:—The number of officers in the Active Army is necessarily much larger than that required in peace-time, because there are not a sufficient number of young and vigorous officers in the Reserve who can be called upon in war-time. The object of the proportional retirements is to introduce young and vigorous officers into the Reserve. The amount of £120,000 is included in the Budget of 1901 to meet the expense of the scheme. This sum will only permit of the scheme coming into operation in the second quarter of next year, when it is expected that 200 officers will retire. Twice the amount would be required if the scheme were to come into operation on 1st January, 1901. The places of the 200 officers, who it is anticipated will retire, will not be taken by others, and the saving of their pay to the Active Army is estimated at £32,000, but from this saving must be deducted their pay in the Reserve, which is estimated at £12,000. The anticipated net economy, therefore, in 1901 is £20,000. It is expected, however, that the annual number of officers retiring under the scheme will gradually increase in the course of ten years from 200 to 2,000. At the end of this time the economy effected, together with some other lesser economies, will be sufficient to cover the expenses of the proposed increase of pay of the captains.

The *Revue du Cercle Militaire* states that the French Minister of War addressed the following despatch, dated 12th November, to the military governors and to generals commanding army corps:—“I consider it important that generals who may be called upon to command a division consisting of the three arms shall be placed in a position to acquire some knowledge of troops of the two arms to which they have not originally belonged. I request you, therefore, to send me the names of such officers who, without inconvenience to the Service, can be given a command over troops belonging to either of the two arms of which they have had but little previous experience. As you are aware, some of the garrisons consist of brigades of the three arms. In these cases an interchange of commands, resulting in the desired object, can be effected without a change of residence of the generals taking part in it. I shall be prepared to receive proposals demanded by this despatch on 1st December, and afterwards as occasions may arise.”

GERMANY.—The *Militär-Wochenblatt* publishes a summary of the Prussian Army Veterinary Report for 1899. The number of horses in the Army during the first three-quarters of the year was 77,125, and during the fourth quarter 80,720. The cases of sickness were 26,580, or 3,277 less than the previous year. The treatment was successful in 24,119 cases; 293 horses were discharged as unfit for service, 987 died, and 288 were killed, making a total loss of 1,568 horses, or five more than in the previous year. 893 horses were still under treatment at the end of the year. Glanders has nearly disappeared from among the Army horses, there being only thirteen attacks of it and one death from it during the year. Infectious chest disease or murrain showed itself in 2,301 cases—a few more than in 1896, but 964 less than in 1898. Of the 2,301 cases, 1,973 were cured, 82 died, and 204 remained under treatment. Most of the cases, 1,044, occurred during the last quarter of the year. The exact length of the incubation period of the disease is still unsettled, but it is probably longer than has been hitherto believed. In one case a period of thirty-one days was observed. Fresh air and isolation of cases are the preventative measures taken. Inoculation has so far proved unsuccessful. Intestinal murrain or dysentery attacked 861 horses only, against 2,066 in 1898, and 1,481 in 1897. Only two horses died from it. More than half the cases occurred in the third quarter of the year. The number of cases of colic and the number of deaths from it were slightly below the average. They were respectively 3,082 and 450. There were only 107 cases of inflammation of the chest and lungs, but 57 of these resulted in death.—*Times*.

According to the *Allgemeine Militär-Zeitung*, General von der Goltz has recently submitted a plan for the re-organisation of the Engineer and Pioneer Corps to the Emperor.

The Corps of Engineers will in future be composed, like the Staff, of specially gifted officers taken from all branches of the Service so as to form an experienced staff for siege warfare. This staff will undergo a special course of instruction at the War Academy and will be especially entrusted with the supervision of siege operations.

It is, besides, thought necessary to have militarily organised corps of officers for the construction of fortresses, and of fortified works incidental to a campaign. This corps will be called *Fortifications-Offizier-Corps*. The members of this corps must be in possession of a fortress architect's certificate and must also belong to the Reserve of Officers.

All the large fortresses which have a fortress staff will be given, according to the new scheme, an officer with the rank of regimental commander, to direct the engineer staff; those fortresses whose garrison on a war-footing is more than two battalions will be given a field officer. In all strong fortress garrisons there will in addition be staff officers who will be placed under the orders of the Chief of the Engineer Staff. The engineer staff of a siege army composed of several army corps would be placed under the orders of an engineer general who would have at his disposal the pioneer and engineer staffs with about 34 or 36 officers of all ranks.

General von der Goltz besides thinks it necessary to increase the number of pioneer battalions. Each army corps, according to his scheme, should have a pioneer regiment of two battalions, of which one would take the field with the army corps, whilst the other would be meant for siege warfare. The Ist, XVth, and XVIth Army Corps have already two pioneer battalions, whilst the XIth has not got one. Should this scheme be adopted, it will become necessary to form 21 pioneer battalions.

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The War Budget for 1901 has just been submitted to the Reichstag. The following are some of the most interesting details regarding it :-

It first treats of the necessary credits for continuing the execution of the changes in Army re-organisation introduced by law of the 25th March, 1899.

As regards new formations, there are five squadrons of mounted Jägers, with their necessary staff, to be formed at Posen, a staff for the Foot Artillery Regiment, one battalion of foot artillery, and one battalion of pioneers. As additions to existing formations should be mentioned those of a second company to the balloon detachment as well as a transport company, and the necessary teams for the same detachment. Finally, the equalising of the effective of cavalry regiments and mounted Jäger squadrons is provided for.

Similarly, as the formations provided for in the 1900 Budget guaranteed uniformity in the field artillery organisation of the German Army, so should those of the 1901 Budget guarantee the same result for the cavalry, foot artillery, and the pioneers. Moreover, in order to further ensure the preparation of the Army for war, the formation of Maxim machine gun detachments will be demanded. It is intended to provide all the army corps with these weapons and to form detachments for working them which will be attached to Jäger or infantry battalions. Five such detachments are inscribed on the Budget submitted to the Reichstag.

For the remount service, the credits meant for the purchase of horses are increased by about 750,000 marks. The average price of a horse is fixed at 900 marks.

The establishment of several new artillery dépôts have been provided for the artillery and its armament. The credit for the purchase of ammunition is higher by about 3,000,000 marks than that of the preceding year. An increase of 340,000 marks has, likewise, been provided for the aid of workmen, their wives and children.

Under the heading of non-permanent expenses may be mentioned a credit of 22,000 marks, the first yearly payment for expenditure for the increase of cartography *materiel* for the staff, and various sums meant for the construction of magazines, barracks, garrison churches, guard-rooms, etc., in different towns.

The manœuvre grounds of Arys and Alten-Grabow should be enlarged. A first yearly payment of 160,000 marks is devoted to musketry establishments, and four first yearly payments are demanded for garrison hospitals. But the most important, as well as the largest of all the credits, is that of 10,000,000 marks demanded for the foot artillery. It will probably be devoted to a renovation of a portion of its guns, as well as to the reinforcement of certain fortified places—of Ulm, for instance, will no doubt be made stronger.—*Précis from Le Progrès Militaire.*

**PERU.**—In accordance with the law promulgated in June, 1899, every citizen is liable for compulsory military service from 19 to 50 years of age.

The Army is divided into five parts, viz. :—

1. The Regular Army.
2. Supernumeraries.
3. The 1st Reserve.
4. The 2nd Reserve.
5. The National Guard.

#### 1. *The Regular Army*

is sub-divided into three groups, viz. :—

a. *The Volunteers*, that is to say, men from 19 to 30 years of age who enlist without awaiting their turn to be called to the colours, and those from 23 to 30 years of age who have already served their term and are desirous of continuing in the Service.

b. *The Conscripts*, that is to say, young men of from 19 to 23 years who are drawn by lot from those inscribed on the communal lists.

c. *Those Enrolled*, namely, individuals called to the colours in consequence of crimes they have committed.

#### 2. *Supernumeraries*.

The three above-mentioned groups suffice to maintain the Army at the effective required by the law. Should unforeseen circumstances necessitate the increase of this effective, supernumeraries are called out. These are conscripts borne on the communal lists, but whose turn for service has not yet come. If these prove insufficient they may be augmented from the reserves.

#### 3. *The 1st Reserve*

includes :—

- a. Men of 23 to 30 years who have completed their military service.
- b. Young men from 19 to 23 years who have married before being called to the colours.
- c. Pupils from technical schools and universities between the ages of 19 and 30 years.

#### 4. *The 2nd Reserve*

consists of :—

- a. Men from 30 to 35 years of age.
- b. Professors from schools, colleges, technical schools, and universities.

#### 5. *The National Guard*

consists of :—

- a. Men of from 35 to 50 years.
- b. Doctors and hospital surgeons.
- c. Permanent judges.
- d. Only sons of poor parents who are more than 60 years old.
- e. Widowed fathers of minors.
- f. Employés in post and telegraph offices.
- g. Chiefs of offices, municipal alcades, etc.

**PORUGAL.**—The military organisation of Portugal has been considerably modified by the law of the 10th July, 1899, and by a decree of the 7th September following. The following is a *résumé* of the situation resulting from the dispositions laid down by these two documents and by former laws and decrees that have not been abolished.

*The Military Service.*

This is obligatory, nevertheless substitution between brothers is permitted, as well as redemption by purchase both from the Regular Service and from the 1st Reserve. The duration of service is fixed at 15 years, and is thus distributed :—

In the Regular Army ...	... .. . . .	3 years.
In the 1st Reserve ...	... .. . . .	5 "
In the 2nd "	... .. . . .	7 "

The military authorities are empowered to distribute furloughs with a lavish hand ; they may transfer to the 1st Reserve the whole of a class entering on its third year of service, which reduces the service in the Regular Army to two years instead of three. The men of the 1st Reserve must complete two periods of instruction of 30 days each, those of the 2nd Reserve two instructional periods of 20 days each.

*Partition of the Country.*

The Kingdom is divided into four divisional districts, which are each subdivided into six regimental, or recruiting and reserve sub-districts. The adjacent islands are divided into two military commands :—

That of the Azores, which consists of two recruiting and reserve sub-districts.

That of Madeira, which has only one recruiting and reserve sub-district.

Each divisional district corresponds to a division of the Regular Army ; certain troops may, however, be detached to a district other than their own. Independent divisional troops are distributed in the districts according to the exigencies of the Service.

Each recruiting and reserve sub-district furnishes the necessary men for a regiment of Regular infantry and a Reserve regiment. The other arms are recruited from excess of men in each sub-district, or from those following special professions.

The personnel attached to sub-districts in peace-time is destined to form the cadres of infantry Reserve regiments. The command of the 27 sub-districts is entrusted to 9 colonels, 9 lieut.-colonels, and 9 majors of infantry. Each of these has under him 11 non-commissioned officers and 4 men.

*Organisation of the Army.*

The Army consists of :—

The Headquarter Staff and Staff Corps.

The various branches of the Service.

Special troops (municipal guards and customs officials).

The Reserves.

*The Headquarter Staff and Staff Corps.*

The cadres of the Headquarter Staff are as follows :—

The King.

A Marshal.

6 Divisional Generals.

20 Brigadier-Generals.

The Staff Service is carried out by officers of the Staff Corps, the effective of which consists of 6 colonels, 6 lieut.-colonels, 6 majors, 20 captains and 10 lieutenants.

*Infantry.*

This arm consists of :—

a. 12 Chasseur battalions, numbered from 1 to 12 and grouped into 4 regiments of 3 battalions each.

b. 27 Infantry regiments of 2 battalions each and numbered from 1 to 27.

*Reserve*.—Each recruiting and Reserve sub-district provides, as has been already stated, a reserve regiment of 2 battalions, commanded by the officer who commands the district in peace-time.

#### *Cavalry.*

This arm consists in peace-time of 8 regiments of 4 squadrons each and a dépôt.

*Reserve*.—8 groups of 2 squadrons. The cadre of each of these groups is formed by a lieut.-colonel of the corresponding Regular regiment, the officers of the dépôt squadron, and the officers of the Reserve.

#### *Artillery.*

This arm consists of :—

- 4 regiments of field artillery of 2 groups of 4 batteries each and a dépôt.
- 1 group of 2 horse artillery batteries.
- 1 group of 2 mountain batteries.
- 4 regiments of garrison artillery of 2 battalions of 4 companies and a dépôt.
- 3 companies of garrison artillery for the adjacent islands.

*Reserve*.—4 groups of field artillery of 4 batteries each.

2 battalions of garrison artillery.

3 companies of garrison artillery for the adjacent islands.

The mobilisation of the Reserve units is prepared by their corresponding Regular units, which provide them with a lieut.-colonel, special staff officers, and officers of the Reserve.

#### *Engineers.*

In peace-time the engineers consist of only a single regiment of 10 companies, viz. :—

- 4 Sapper companies.
- 2 Pontoon "
- 1 Telegraph company.
- 1 Railway "
- 1 Driver "
- 1 Dépôt "

*Reserve*.—Consists of 5 companies, viz. :—

- 2 Sapper companies.
- 1 Pontoon company.
- 1 Telegraph "
- 1 Railway "

The cadres of these units are furnished from officers of the staff of that arm, and Reserve officers.

#### *Large Units.*

The forces of the Kingdom are grouped into :—

- a. 4 Regular divisions.
- b. Independent troops of cavalry, artillery, and engineers.
- c. Regular troops for garrisoning the adjacent islands.
- d. Reserves.

*Composition of the Division*.—Each division consists of :—

- 1 Chasseur regiment of 3 battalions.
- 2 Infantry brigades of 2 regiments of 2 battalions.
- 1 Cavalry regiment of 4 squadrons.
- 1 Field Artillery regiment of 2 groups of 4 batteries each.
- 1 Company of engineers.

*Troops not formed into Divisions*.—These consist of :—

*Cavalry*.—2 brigades of 2 regiments of 4 squadrons each.

*Artillery*.—1 group of 2 horse artillery batteries.

1 group of 2 mountain batteries.

2 Garrison artillery regiments of 2 batteries of 4 companies each.

*Engineers.*—2 Pontoon companies.

1 Telegraph company.

1 Railway

" *Island Garrisons.*

The garrison of the Azores and of Madeira consists of 3 regiments of infantry and 2 garrison artillery companies.

*Reserve.*—Also consists of 3 infantry regiments and 3 garrison artillery companies.

*The Effective Strength of the Army on a Peace-footing*, as well as the numbers of the contingent, is determined annually by law. For the year 1899-1900 the numbers decided upon are respectively 30,000 men for the strength of the Army and 15,700 men for the contingent. This last includes 14,000 men for the Regular Army, 1,000 for customs, 500 for municipal guards, and 200 men for fleet. In reality 15,000 men are not enrolled annually, and in consequence of the numerous furloughs given the effective peace-strength falls far short of 30,000 men.

The decree of the 7th September, 1899, fixes as follows the present war-strength of the small units :—

				Men.	Horses.	Mules.
Company of Infantry	... {	peace-footing ..	..	70	—	—
		war-footing ..	..	250	—	—
Field Battery	... {	peace-footing ..	..	82	17	30
		war-footing ..	..	169	35	120
Mountain Artillery	... {	peace-footing ..	..	78	7	20
		war-footing ..	..	235	10	63
Horse Artillery Battery	... {	peace-footing ..	..	90	54	54
		war-footing ..	..	188	121	114
Squadron of Cavalry	... {	peace-footing ..	..	125	90	—
		war-footing ..	..	151	136	—

The following tables give the total of the strengths of the Regular Army and the Reserves on a peace and on a war footing :—

A. *Peace-Footing.*

	Officers.			Arms.	Effectives.			
	Com-	Non-	Men.		Men.	Horses.	Mules.	Guns.
	batants.	Comb.						
Regular Army ...	1,489	234	29,703	{ Engineers ...	843	67	58	—
				Cavalry ...	4,296	3,092	—	—
				Artillery ...	4,717	762	1,108	144
				Infantry ...	21,003	171	—	—
				Others ...	—	20	126	—
Reserves... ...	81	—	297	—	—	—	—	—

B. *War-Footing.*

Regular Army ...	1,807	222	84,872	{ Engineers ...	1,749	100	—	—
				Artillery ...	9,682	1,509	4,342	226
Reserves... ...	1,307	140	64,243	Infantry ...	68,433	225	—	—
				Cavalry ...	5,008	4,560	—	—
Regular Army ...	1,807	222	84,872	Engineers ...	1,094	62	—	—
				Artillery ...	4,652	614	1,992	96
Reserves... ...	1,307	140	64,243	Infantry ...	56,025	189	—	—
				Cavalry ...	2,472	2,256	—	—

RUSSIA.—The Government has recently published "Instructions for military shops and canteens," of which the following are the principal provisions :—

The shops are formed with the object of providing soldiers with articles of daily and necessary use of the best possible quality at the lowest possible rate. Canteens may be joined to these shops where men may be able to obtain food and tea. Wine, beer, and brandy are permitted when necessary; games of chance of all sorts are forbidden. These shops are kept under personal supervision. The moneys necessary for their foundation are taken from the corps funds, who treat them as an advance. Purchase and sale must be conducted on ready-money principles, the prices being fixed by the officer commanding the regiment or the unit concerned. A company officer is charged with the management of the shop for a period of at least one year, and at most for three years. A field officer is appointed every year to supervise the buying and selling operations, and a board is nominated each month to audit the accounts. The result of this audit is published in regimental orders. The leasing of these shops to contractors is absolutely forbidden.

The profits are spent in the purchase of newspapers and journals, and in the lowering of the prices.—*Revue Militaire*.

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SWEDEN.—The *Kölnische Zeitung* announces that the Minister of War has just elaborated a scheme which will replace the present method of recruiting by compulsory military service for all. According to the recruiting methods in force for the last five years, the Swedish Army was composed of men who enlisted voluntarily, of men who were furnished to the military authorities by landed proprietors, who were enabled in this manner to evade taxation, and finally of men who were compelled to serve for a period of ninety days.

Should this new scheme be adopted by the Parliament, military service will become compulsory for all, and by this means the Swedish Army will obtain greater homogeneity and will considerably increase its forces.

All men passed fit will have to give up 365 days of military service to the State ; this service will be thus distributed : A first period of 245 days, further periods of 35 days during the third, fourth, and fifth years, and, finally, a period of 15 days during the ninth year.

But in the cavalry, the artillery, and in a portion of the engineers, the first period of service will be for 281 days, and the men will then leave to put in further periods of 42 days each during the second and the fourth years.

The Army will consist of 6 army corps and 28 infantry regiments, plus the different corresponding units of artillery, engineers, etc. The new scheme also provides for the organisation of a considerable Reserve and Landsturm.

## CORRESPONDENCE.

*To the Editor of the JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION.*Royal United Service Institution,  
6th December, 1900.

SIR,—Since the discussion on the Routes of Submarine Cables, two events of great importance have occurred :—

1. We had the long isolation of Europe from telegraphic news of the events at Pekin. The result was an immediate outcry over the want of foresight shown in not having a cable to Taku. If critics would only stop to consider, not one of them would have foreseen that a cable to Taku was imperative at the beginning of this year. All that it proves is that if we had fulfilled the natural commercial demand for a cable to Chefoo, we should have obtained all that we require strategically, and that the strategical requirements are best met by having the resources for laying cables ready, so that they can be laid down when required in critical times.

2. Contracts have been invited and accepted for the construction of a Pacific Cable by the Fanning Island or All-British route. I hope Parliament may modify the scheme in favour of the route by Honolulu. The Committee presided over by Lord Selborne never took the evidence of a single naval or military officer as to the strategical aspects ; and so far as Service opinion has expressed itself, it has been hostile to the All-British route and in favour of the cheap commercial route via Honolulu on the American territory of Hawaii.

I am, Sir, your obedient servant,  
CARLYON BELLAIRS,  
Lieutenant, R.N.

## NAVAL AND MILITARY CALENDAR.

NOVEMBER, 1900.

1st (Th.) H.M.S. "Condor" commissioned at Chatham for Pacific.  
 " " Lord Roberts reported sharp fighting near Bethlehem.  
 " " Bothaville was destroyed by the British.  
 " " 400 British Volunteers, attached to Line battalions, left Cape Town for England in the "Avondale Castle."  
 " " 500 men of the first Canadian Contingent arrived at Halifax, Canada, from Cape Town in the "Idaho."

2nd (F.) H.M.S. "Sybille" left Plymouth for Cape.

3rd (Sat.) Shoeman's laager in Steenkampsberg was captured by the British.

4th (S.) Colonel Le Gallais surprised the Boers near Bothaville and completely routed them. Steyn and De Wet, who were with the Boers, escaped. Colonel Le Gallais and 2 officers were killed, 7 officers, and 26 men wounded. British captured 7 guns and 100 prisoners.

6th (T.) A Battery R.H.A.  
 Composite Regiment of Household Cavalry  
 Head-Quarters Royal Canadian Regi- } ment

7th (W.) 25 officers and 700 men of Australian Contingent left Cape Town for Australia in the "Harlech Castle."

8th (Th.) H.M.S. "Fearless" paid off at Portsmouth.

" " Launch of first-class battle-ship "Mikasa" from Messrs. Vickers, Sons & Maxim's Yard at Barrow-in-Furness for Japanese Government.

Left Cape Town for England in the "Hawarden Castle."

8th (Th.) H.R.H. the Duke of Cambridge inspected the Metropolitan Contingent of troops for Australia.

9th (F.) Sir Redvers Buller arrived at Southampton from Cape Town.

10th (Sat.) H.M.S. "Blake" left Plymouth for Malta with crew for "Renown."

" " H.M.S. "Condor" left for Pacific.

" " Three Pao-ting-fu officials were sentenced to death by a military tribunal for their connection with the massacre of missionaries in China, and were beheaded.

12th (M.) The British troops constituting a portion of the guard of honour to T.R.H. the Duke and Duchess of York in Australia left Southampton.

13th (T.) H.M.S. "Swallow" arrived at Plymouth from S.E. Coast of America.

14th (W.) H.M.S. "Hermes" arrived at Plymouth from West Indies.

15th (Th.) H.M.S. "Pioneer" commissioned at Chatham for Mediterranean.

" " H.M.S. "Sparrow" commissioned at Chatham for Australia.

" " Portugal withdrew the Exequatur from the Consuls of the Transvaal and Orange River Colony in Portuguese territory.

16th (F.) H.M. The Queen inspected a small body of Colonial troops at Windsor Castle.

18th (S.) Brand's Commando at Baberspan was severely defeated, the British Lancers riding through the enemy several times.

19th (M.) 2nd Canadian Contingent (50 officers and 1,000 men) left Cape Town for Canada.

20th (T.) H.M.S. "Scylla" arrived at Sheerness with relieved crew of "Barracouta" from Cape.

21st (W.) H.M.S. "Blanche" commissioned at Devonport for Cape.

" " An outpost of the Buffs was surprised near Balmoral and lost 6 killed, 5 wounded, and 31 taken prisoners.

" " 400 British Volunteers attached to Line battalions arrived at Southampton from Cape Town in the "Avondale Castle."

22nd (Th.) The Dutch cruiser "Gelderland" with Mr. Kruger on board arrived at Marseilles.

23rd (F.) The capture of Chief Kobina Cherry was announced from Ashanti.

" " Dewetsdorp surrendered with 400 men and 2 guns to De Wet. British loss 15 killed, 42 wounded. Town was afterwards recaptured and De Wet, after being pursued, was severely handled.

24th (Sat.) H.M.S. "Glory" left Portsmouth for China.

" " Lumsden's Horse left Pretoria *en route* for India.

26th (M.) H.M.S. "Blake" arrived at Plymouth with relieved crew of "Renown" from Malta.

" " The Ogaden Somalis in Jubaland, British East Africa, rebelled and murdered Sub-Commissioner Jenner.

29th (Th.) A Battery R.H.A.  
Composite Regiment of Household Cavalry  
Head-Quarters Royal Canadian Regi-  
ment } Arrived at Southampton  
from Cape Town in the  
" Hawarden Castle."

" " H.M. The Queen inspected the 1st Life Guards at Windsor.

" " Ashanti Campaign was announced as at an end.

30th (F.) General Settle defeated the Boers under Commandant Hertzog near Luckhoff.

" " H.M. The Queen inspected the Canadian Volunteers at Windsor.

" " Lord Kitchener succeeded Lord Roberts in command of the British Forces in South Africa.

## FOREIGN PERIODICALS.

### NAVAL.

ARGENTINE REPUBLIC.—*Boletin del Centro Naval*. Buenos Aires: September, 1900.—“Welcome!” “New Formula for Calculating the Power Exerted by Paddle Wheels.” “Centenary of Colonel Tomas Espora.” “A Study on Modern Battle-ships” (*continued*). “*À propos* of the Electrical Congress at Paris.” “The ‘Belleisle’ Experiments.” “To the Memory of the Crew of the ‘Almirante Brown.’” “Naval Notes.”

October, 1900.—“Our Guests!” “Determination of Magnetic Intensity” (*continued*). “Four Centuries of Naval Activity.” “Method of Calculating Indicated Horse-Power.” “Trafalgar.” “Co-operation of the Argentine Republic in the International Antarctic Expedition.” “General Drill Regulations.” “A Study on Modern Battle-ships” (*continued*).

AUSTRIA-HUNGARY.—*Mittheilungen aus dem Gebiete des Seewesens*. No. 12, Poia: December, 1900.—“Ancient Egyptian Types of Ships and their Development.” “On the Suitability of Certain Sorts of Super-heated Steam for Driving Engines, with special regard to Boats’ Engines.” “Vickers’ Guns at the Paris Exhibition.” “Launch of the German Cruiser ‘Amazone.’” “Naval Notes.”

BRAZIL.—*Revista Maritima Brasileira*. Rio de Janeiro: August and September, 1900.—“On the Study of Languages in the Navy.” “Lord Kelvin’s Nautical Instruments.” “The Italian Navy: The Evolution of the Battleship, Naval Construction in Italy and Armoured Cruisers.” “A Naval Babel.” “An Automatic Torpedo Governor.” “A Comparative Graphic Demonstration of the Power of Ships.” “The Chino-Japanese War from the Point of View of International Law.” “French and English Squadrons in the Channel and Mediterranean.” “Naval Notes.”

FRANCE.—*Revue Maritime*. Paris: October, 1900.—“Our Ships of War and their Predecessors” (*continued*). “Vice-Admiral Jacob, 1768-1854.” “The Naval School and University Programmes.” “The English Naval Estimates.” “The Spanish-American War: Admiral Cervera’s Squadron” (*concluded*). “The ‘Belleisle’ Experiments.” “The Folly of Speed.” “Naval Notes.” “The Mercantile Marine.”

*Le Yacht*. Paris: 3rd November, 1900.—“The Formula of Displacement of 1899 and its Application.” “Yachting Notes.” “The New Austro-Hungarian Battle-ship ‘Habsburg.’” “International Maritime Congress.” “The Mercantile Marine at the Exhibition.” 10th November.—“The Employment of the Torpedo on board Ships of War.” “Yachting Notes.” “The New Formula of Displacement and its Application.” “Historical Notices of French Ships of War: The ‘Alger’” (*continued*). “The Mercantile Marine: French and Foreign.” 17th November.—“*À propos* of Submarine Telegraphs.” “Yachting Notes.” “A Letter from China.” “The River-Steamers ‘Charles Brücke’ and ‘Taniotsy’ for service in Madagascar.” “The New Russian Armoured Cruiser ‘Askold.’” 24th November.—“The Report of M. Fleury-Ravarin on the Naval Budget.” “Yachting Notes.” “The Mercantile Marine: French and Foreign.” “The new English Armoured Cruisers of the ‘Essex’ Type.” “The Etaples Trawlers.”

*Le Moniteur de la Flotte*. Paris: 3rd November, 1900.—“The Ice-Breaker ‘Ermack.’” “The Superior Council of the Navy.” “The Hydraulic Works.” “Colonial Notes.” 10th November.—“The Subsidies to the Mercantile Marine.”

"The Navy in Parliament." "The Minister of War at Brest." "Chinese Affairs." 17th November.—"Submarine Boats." "The Report on the Navy Budget." "The Navy in Parliament." "Chinese Affairs." "Colonial Notes." 24th November.—"The New Construction Programme." "The Navy in Parliament." "Chinese Affairs." "Colonial Notes."

*La Marine Française*. Paris : 15th November, 1900.—"The Invasion of England" (continued). "China and the Chinese." "The Mediterranean: The Western Basin, the Eastern Basin." "The English Boiler Committee."

GERMANY.—*Marine Rundschau*. Berlin : December, 1900.—"Why was Napoleon Unable to Gain any Success at Sea?" "The Distribution of the Naval Brigades in Seymour's Relief Expedition and the Fighting at and about Tientsin, June-July, 1900" (continued). "Description and Critical Discussion of the Activity of the English Fleet in the Baltic, 1854." "The Hurricane at Galveston, 8th September, 1900." "Medical Conditions on board ship in the Seventeenth and Eighteenth Centuries" (continued). "Naval Notes."

ITALY.—*Rivista Marittima*. Rome : November, 1900.—"Land and Sea." "War Navies at the Paris Exhibition." "On the Stability of Merchant-Ships." Letters to the Editor :—"Messina and Milazzo." "On the Use of Artificial Cold on board ships." "Naval Notes."

PORUGAL.—*Revista Portuguesa, Colonial e Maritima*. Lisbon : November, 1900.—"Portugal and Her Colonies" (continued). "Expedition to Mataca." "The Province of Angola and the Independent Congo State." "Naval Notes."

SPAIN.—*Revista General de Marina*. Madrid : November, 1900.—"Guns and Battle-ships." "Coast Defence." "War Navies at the Paris Exhibition." "The Return of the Duke of the Abruzzi." "Some Tactical Considerations bearing on the Construction of Torpedo-boats." "A Graphic Comparison of the Balistic Qualities of some Guns of Large Calibre." "Ibiza and the Maritime Defence of the Balearic Islands." "Naval War Game in the Russian Navy." "Trials of American Turrets." "Calculation of the Luminous Powers of Lighthouses" (continued).

UNITED STATES.—*Proceedings of the United States Naval Institute*. No. 3. Annapolis : September, 1900.—"Torpedo Questions in Naval Warfare." "Memorandum on General Staff for U.S. Navy." "An Address delivered before U.S. Naval War College, Newport." "An Account of some Past Military and Naval Operations directed against Porto Rico and Cuba." "The Pacific Submarine Cables." "The Naval Battle of Manilla." "With Reference to the Size of Fighting-Ships."

### MILITARY.

AUSTRIA-HUNGARY.—*Militär-Zeitung*. Vienna : 3rd November, 1900.—"Reform of Military Law." "Examples of Applied Tactics." "War Experiences of a French Sergeant." 11th November.—"New Lodging Allowance Regulation." "On Recruit's Training." "The Entanglements in China" (continued). 19th November.—"Winter Manœuvres." "A Reform in Uniform." "A New Q.F. Gun in Sight." "The Entanglements in China" (continued). 27th November.—"A Book for Our Navy." "The Entanglements in China" (continued).

*Organ der Militär-wissenschaftlichen Vereine*. Vienna : November, 1900.—LXI. Volume, 3rd Part.—"Field-Marshal Freiherr von Beaulieu in the Italian Campaign of 1796." "The Influence of Alimentation on Operations in War."

*Mittheilungen über Gegenstände des Artillerie- und Genie-Wesens.* Vienna : November, 1900.—“Experiments for Trying the Tensile Effects of Powder Gas in Gun Tubes.” “Motor Cars and Heavy Transport.”

**BELGIUM.**—*Bulletin de la Presse et de la Bibliographie Militaires.* Brussels : 25th November, 1900.—“Evolution of Infantry Tactics in Belgium” (*continued*). “Military Instruction, Education, and Spirit.” “The French War Budget for 1900.” 30th November.—“Evolution of Infantry Tactics in Belgium” (*continued*). “The French War Budget for 1900” (*continued*).

**FRANCE.**—*Revue du Cercle Militaire.* Paris : 8th November, 1900.—“Tactical Lectures.” “The Transvaal War” (*continued*). “Infantry under German Artillery Fire” (*continued*). “The Colours of the 2nd Zouaves.” 10th November.—“Artillery Remounts.” “The Philippines—The Battle of Putol” (with sketch). “The Transvaal War” (*continued*). “Infantry under German Artillery Fire” (*continued*). 17th November.—“Tactical Lectures,” “A New Infantry Regulation that is Wanted.” “The Transvaal War” (*continued*). “Artillery Remounts” (*concluded*). 24th November.—“The Russian Campaign in Manchuria” (with sketch). “A New Infantry Regulation that is Wanted” (*continued*). “The Transvaal War” (with sketch, *continued*). “War and Humanity.”

*Le Spectateur Militaire.* Paris : 1st November, 1900.—“The South African War” (*continued*). “The English Military Problem” (*continued*). “The Campaign of 1866” (1 sketch, *continued*). “The Trans-Sahara” (*continued*). “The Campaign of 1809” (*continued*). 15th November.—“The South African War” (1 sketch, *continued*). “The Campaign of 1866” (*concluded*). “The Trans-Sahara” (*continued*). “The Campaign of 1809” (2 sketches, *continued*).

*Revue Militaire.* Paris : November, 1900.—“Operations against the Afghan Tribes of the North-West of India.” “The German Regulation of the 18th January, 1899, on Military Railway Transport” (*continued*). “Regulation of the Cossack Lava.” “Military Organisation of Portugal.” “The Campaigns of Marshal Saxe” (*continued*). “The War of 1870-71” (*continued*).

*Revue du Génie Militaire.* Paris : October, 1900.—“The Military Hospital of Bizerta.” “Speech delivered at the Unveiling of Vauban’s Monument at Bazoches.”

*Journal des Sciences Militaires.* Paris : November, 1900.—“Napoleonic Maxims.” “The Rôle of Fortification in Military Operations—Permanent and Temporary.” “Small Arms.” “The Methods of the Different Arms in a Decisive Attack.” “The Rôle of Independent Cavalry” (*continued*). “The Company and the Battalion.” “The Austrian War of Succession, 1740-1748.”

*Revue du Service de l’Intendance Militaire.* Paris : September-October, 1900.—“The Enamelling of Kitchen Utensils from a Hygienic Point of View.” “Composition, Procedure, and Functions of Reform Commissions.” “Feeding of the Soldier in the Netherlands Army.” “Improved Russian Flour.” “Field Service Rations in the English Army.” “The Use of Chemicals in Preserving Meat in a Fresh Condition.” “Chemical Industries in Algeria.” “The Largest Abattoirs of the World.” “Extracts from the Works of Parmentier.” “Extemporaneous Methods for the Purification of Water.” “Eatable Plants Cultivated in the Antilles.”

*Revue d’Artillerie.* Paris : November, 1900.—“Field Maneuvres in Battery Groups” (*continued*). “The Skoda Artillery at the Paris Exhibition of 1900.” “Artillery Horses and Wagons.”

*Revue de Cavalerie.* Paris : November, 1900.—“The Breeding and Training of War Horses.” “Scouting Operations of the Army of Northern Virginia in the American War of Secession” (with 2 sketches, *concluded*). “Night Marches.” “Lesson of the 16th August” (*continued*).

GERMANY.—*Militär-Wochenblatt*. Berlin : 3rd November, 1900.—“Frederick the Great's Oblique Order of Battle” (*concluded*). “The French Great Autumn Manœuvres of 1900.” “Demobilisation of Russian Troops in East Asia.” 7th November.—“A New Light on the Austrian Operations on Interior Lines in 1866.” “The Boxer Insurrection in China” (*continued*). 10th November.—“On the Progress in Estimating Long Distances.” “State Veterinary Statistics of the Prussian Army for 1899.” 14th November.—“French Colonial Troops.” “The Boxer Insurrection in China” (*continued*). “Heavy Field Howitzers.” “Return of the 1st Caucasian Brigade to the Caucasus from Central Asia.” 17th November.—“A French Plan of Campaign for 1867.” “Universal Obligation for Military Service in Chili.” “Musketry Instruction of English Infantry and Cavalry Officers.” “Portugal's Colonial Troops.” 21st November.—“Theory and Practice of Musketry in Battle Formations.” “England and the Transvaal” (*continued*). “News from the Russian Army.” 24th November.—“The Grand Autumn Manœuvres of the Austro-Hungarian Army in 1900” (with sketch). “Theory and Practice of Musketry in Battle Formations” (*continued*). 28th November.—“The Warfare in China.” “England and the Transvaal” (*continued*).

*Neue Militärische Blätter*. Berlin : 1st November, 1900.—“The Imperial Manœuvres in Pomerania, 1900” (with map). “Francesco Crispi and Italy's Maritime Defence.” “Life in the Old Prussian Army, 1763 to 1806” (*continued*). 15th November.—“The Science of the Russian Army.” “Life in the Old Prussian Army, 1763 to 1806” (*continued*). “Admiral Seymour's Expedition to Pekin.”

*Internationale Revue über die gesammten Armeen und Flotten*. Dresden : November, 1900.—“Naval and Military News from Belgium, Germany, France, Great Britain, Italy, Norway, Austria-Hungary, Roumania, Russia, Spain, the Transvaal Republic, and Turkey.” *Supplement 14*.—“Tactical Considerations of the War in South Africa.” *French Supplement*.—“The Attack of Field Fortifications.” “Krupp Field Gun C/99.”

*Jahrbücher für die Deutsche Armee und Marine*.—Berlin : November, 1900.—“Basis for the Re-organisation of the Corps of Engineers and the Pioneers.” “Contributions to the History of Siege Warfare.” “The Landing Fight of the Prussian Steam-corvette ‘Danzig’ at Tres Forcas on the 7th August, 1856.” “Frederick the Great and Prince Henry of Prussia.” “Count Waldersee and Prince Schwarzenberg.” “A Soldier, body and soul.” “The Future Re-organisation of the Superior Council of War in France.”

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ITALY.—*Rivista di Artiglieria e Genio*. Rome : October, 1900.—“The Mastery of the Sea and the Defence of the State.” “Study of a New Form of Tente d'Abri.” “The Sieges, Bombardments, and Blockades of Small French Fortresses during the Franco-German War, 1870-71.” “On the Stability of Breakwaters.” “Methods of Maintaining the Supply of Ammunition to Field Artillery during Action, in the Armies of the Principal European Powers.” “The Dardieu Apparatus for Telephone and Telegraph Circuits and Multiple Stations.” “French Apparatus for Aiming and Working Field Guns.” “Motor-Cycles for Small Field Guns.” “Military Notes.”

*Rivista Militare Italiana*. Rome : November, 1900.—Has not been received.

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PORTUGAL.—*Revista de Engenharia Militar*. Lisbon : October, 1900.—“Two Questions Relative to the Tactics of Siege Warfare.” “The Walls of Lisbon” (*continued*). “The Central International Electrical Station at the Paris Exhibition.” “The Matériel of Pontoon Companies.” “Military Notes.”

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RUSSIA.—*Voënnnyi Sbórnik*. October, 1900.—“Military Operations in Ingria in 1706-1708.” “Formation of the Preobrajensky Regiment” (*concluded*).

"Operations of General Gourko's Advanced Corps in 1877" (*concluded*). "Notes on the Life, the State, and Preparedness for War of the French Infantry" (*continued*). "The Cavalry Charger." "Oblique Fire." "Field Ballooning Sections: Their Organisation and Employment" (*concluded*). "Historical Sketch on the Formation of the Amour Cossacks, and their Present State." "In Bulgaria during the Autumn of 1899." "V. V. Krestovsky as a Military Writer" (*continued*). "Increase in the German Territorial Army in 1900." "War." "Memoirs of General Langeron."

November, 1900.—"The Capture of Sveaborg in 1808." "Arab-Konak, the 21st November, 1877." "The Scheme for Field Service Instruction." "Notes on the Life, the State, and Preparedness for War of the French Infantry" (*continued*). "The Cavalry Charger" (*concluded*). "Notes on Artillery." "The Engineers at the Manceuvres." "The last Type of Barracks for Troops, and Officers' Quarters." "In Bulgaria during the Autumn of 1899" (*continued*). "V. V. Krestovsky as a Military Writer" (*continued*). "Review of the Operations of the Russian Troops for the Suppression of the Rising in China." "The French Colonial Troops."

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SPAIN.—*Memorial de Ingenieros del Ejército*. Madrid : November, 1900.—"The Spanish Military Electric Pile Batteries" (*concluded*). "Military Telegraphic Service" (*continued*). "Use for Military Purpose of Iron Cement."

*Revista Técnica de Infantería y Caballería*. Madrid : 1st November, 1900.—"Spanish Dominion and Wars in the Low Countries" (*continued*). "Old and Young Men in the Militia." "The Cavalry Arm and Tactical Regulations" (*continued*). "The Transmission of Orders and Reports" (*continued*). "Military and Economic Preponderance." "Fire Discipline." 15th November.—"The Command and the Initiative." "The Military Manceuvres in Aragon." "The Transmission of Orders and Reports" (*continued*). "The Cavalry Arm and Tactical Regulations" (*continued*). "National Defence and the Navy."

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SWITZERLAND.—*Revue Militaire Suisse*. Lausanne : November, 1900.—"Military Ballooning in Switzerland." "Mountain Manceuvres." "Infantry Armament."

## NOTICES OF BOOKS.

*Leben und Thaten des französischen Generals Jean Baptist Kleber. Von Hans Klaeber, Oberstlieutenant, a. D. 8vo. E. HEINRICH. Dresden, 1900.*

This is an exceedingly interesting study of the life of a very remarkable man, whose merits had the misfortune of being overshadowed by the subsequent growth of the Napoleonic legend, and by the multitude of pretentious reputations which sprung up around it. Apart from the life of the central figure it is an invaluable contribution to the history of the making of that Army which alone rendered Napoleon's career possible, and without a knowledge of which an intelligent appreciation of his strategy is very difficult to arrive at. The marvel of Napoleon's successes lies not so much in the orders and dispositions he issued as in the fact that men were found ready to his hand to execute them. With any other Army but that which the events of the French Revolution had forged, the probabilities are that the same orders would have led only to defeat and disaster.

Kleber was born at Strasbourg in 1753, his parents belonging to the lower middle class. His education was very partial, but he developed a taste for architecture which ultimately became his profession, although it was many years before he settled down to it. As a youth of eighteen he was sent to Paris to study, and whilst there he must have picked up a knowledge of men and of the ways of a great city which saved him from the blight of pronounced provincialism; but he got into debt, returned to his native place in considerable disgrace with his relatives, and it was when his fortunes were at their lowest ebb that chance interfered to determine his future career. He was a big, well-grown, and athletic youth, rather fond of a row than otherwise, and when one evening he saw two young strangers being roughly treated by a street mob, he promptly intervened and rescued them from their predicament. The strangers belonged to a noble family in Bavaria, and to show their gratitude procured for him a nomination for the Cadet Institution at Munich. This he accepted gladly, and being an excellent draughtsman and a brilliant fencer soon established his position. One day Graf Kaunitz, a well-known and distinguished Austrian officer, came to visit the establishment, and being much struck with the excellence of his topographical drawing and with his performance in the gymnasium, offered to befriend him if he would come to Vienna. There being little hope for an ambitious youngster in the Bavarian Army, he gladly accepted the opening thus afforded him, and though on reaching Vienna he did not at first find his path strewn with roses, the Count ultimately kept his word and secured him a commission in his own regiment, the 38th Infantry "Kaunitz," then stationed in the Netherlands.

He joined his regiment at Mons on the 1st October, 1777, but having no means beyond his pay he found it very difficult to keep up the pace of his more fortunate comrades, and the fact that he was not of noble birth made his position almost unbearable. Luckily the war of the Bavarian Succession broke out, and he was ordered on active service to Bohemia, and though, except for a few skirmishes, the campaign was almost bloodless, the hardships were very great, and he learnt what men can do and bear when held together by proper discipline—knowledge which hereafter was to prove invaluable to him. On the conclusion of peace, he marched back to the Netherlands, the regiment going into quarters at Luxemburg. This was a far more expensive station than Mons, and very soon he was again in such financial straits that he decided to send in his papers, return to Strasbourg, and resume his profession of architect.

Ultimately, after many ups and downs, he obtained an appointment in Belfort, where for some years he did excellent work, but the clouds of the Revolution were

rapidly gathering, the call for volunteers arose, and finding, in the financial crisis through which all districts of the country were passing, no prospect of obtaining regular payment of his salary, he ultimately enrolled himself as a private in the 4th Volunteer Battalion of the Upper Rhine, and marched with it to the front in January, 1792. Fortunately, he was by this time a well-known and popular character in his district, and having a thorough grounding in regimental work, he was almost immediately promoted to the adjutancy of his corps, and the colonel being a mere figure-head, an old man of eighty, he practically commanded the battalion.

After a few months they were ordered north to join the Army concentrating around Landau, destined under Custine to invade Germany. The advance began on the 29th September, 1792, and for a time met with astonishing success. Mainz was easily captured in spite of its extensive and formidable defences—bastions with 50 feet scarp and broad well-flanked ditches. The Rhine was crossed, and Custine succeeded in penetrating to Frankfort, to the Lahn, and for some miles north of Homburg; but then the momentum died out, discipline simply ceased to exist, and at the first serious pressure on the part of the Allies the whole mob dissolved and drifted back in rudderless confusion across the river. Custine had done all that man could do, but he paid for defeat on the scaffold. Some 25,000 of the best troops, which included Kleber and his battalion, were thrown into Mainz, and Kleber became the life and soul of the defence.

This is a chapter in military history which deserves far closer attention than it has hitherto received, for there are few finer examples of the power of an active defence. The spirit of the French was superb. Destitute of all proper supplies, throughout a winter of almost Arctic severity, for the Rhine was frozen so firmly that field artillery could cross on the ice, these ragged, undisciplined volunteers harassed the enemy for weeks with incessant sorties and pushed out entrenchments far beyond the limit of the place, right up to the ground now held by the recently completed *enceinte*. Ultimately their resistance broke down, they were forced to capitulate, but in recognition of their gallantry they were allowed to march out with drums beating and colours flying, and the whole force was paroled for a year.

The surrender narrowly cost Kleber his head, but a better feeling was prevalent in Paris for the moment, and he was allowed to rejoin the garrison which was marched south through Paris to attempt the reduction of the Vendees. Here is another neglected page of history: a more bloody and determined struggle never was waged; quarter was never given nor offered by either side, and though both were still undisciplined as soldiers, they inflicted losses on one another of 30 to 40 per cent. in many actions. Anything less like the present Boer war it is impossible to imagine.

In October, 1793, Kleber was promoted to the rank of Divisional General, and though surrounded by spies and hampered by incompetence on every side, attacked most particularly for his consistent efforts to ameliorate the horrors of the war, he succeeded in establishing his reputation as a dauntless fighting leader, and a brave man who simply cowed his secret enemies by his strength of character and directness of purpose. Constantly the subject of denunciations to the Council of Public Safety, sick to death of the horrors he was powerless to prevent, he, nevertheless, saw his purpose through to a successful issue, and could claim when he yielded up his command that he had left the foundations of a lasting peace behind him.

In April, 1794, he left La Vendée and was appointed to the Army of the Sambre and Meuse, under Jourdan. This part of the work shows very clearly the driving energy that the system of guillotining unsuccessful generals had imparted to French methods of warfare. There was no longer hesitation to act, or delay in execution. At all costs victory had to be secured, and if beaten to-day they returned to the attack next morning, and again the day after, and by mobility and numbers they fairly wore the Austrians down.

Mobility was secured in this way. Five thousand men at the right time and place are worth more in a campaign than ten thousand a day too late. If a battalion marches, say fifteen miles, and arrives at its destination complete, then it is evident, since men are not all equal in endurance, that a large number of the men have only partially put out their power, so they simply marched them till the weaker half dropped on the road, the remainder had still a little in hand and could fight. If decisive results are to be obtained men must die, and it was immaterial to the Republic whether they died on the march or on the field of battle—a successful victory brought the struggle nearer to its close, and the economy in life is always ultimately on the side of the victors.

Before this resolute leading the Austrians, compelled to spare their men like all long-service Armies (because the trained soldier costs too much time and money to be replaced), everywhere fell back, and the victory of Fleurus entailed the surrender of the whole of Belgium. Maestrich and some other fortresses alone held out, and against the former Kleber and his wing of his army some 40,000 strong was directed.

This is another siege worth studying, and the Austrian resistance was most resolute. The difficulties the French had to contend with, due to bad roads hampering the arrival of an adequate siege-train and its supplies of ammunition, were immense, but Kleber proved equal to all demands; and though the siege-train never attained the calculated minimum, the place capitulated on the 8th November, 1794, after fourteen days of investment; bombardment thus obtaining the desired result in less than a third of the time a regular siege would have attained and at an economy in human life to the assailants, probably also to the defenders, of perhaps 1,000 men each.

Next morning the Army was already on the move, reaching Köln on the 12th. The whole of the left bank of the Rhine was now in French hands except Mainz, which still held out, principally owing to the slowness of the besiegers, due to defective communications and the want of Kleber's driving energy. This point seems to have struck the Committee of Public Safety also, for already on the 21st of the same month he received orders to take command of the troops before Mainz, and set out next day, anything but pleased at the prospect before him. For the head-quarters of these forces were also the rendezvous for all the fussy and incompetent "Representatives of the People," whose interference in the conduct of operations had already more than once gone nigh to cost him his head. He had also the jealousy of General Michaud, commanding the Rhine Army, to reckon with, and the destitution of the Army in all essential stores and money defies description. He did his best for a couple of months, but then his health broke down and he was obliged to take sick leave to Strasbourg. Here he received news of Jourdan's sickness, and was ordered to take over the Sambre and Meuse Army pending that general's recovery. This was a most fortunate way of escape from his troubles. He was sincerely attached to the officers and men he left behind him, and for the next few months found full occupation in endeavouring to obtain for them pay and equipment. His knowledge of German, too, enabled him to put matters between the civil population (especially the priests) and the Army on a better footing.

On Jourdan's return, he reverted to his command of the left wing of the Army and commenced preparations for the projected passage of the Rhine near Düsseldorf; but the Austrians seized every boat on the river and immense difficulties were encountered in collecting a sufficient number. Contracts were given out in Holland, and the contractors created delays as usual; but the attempt was ultimately successful, though the Austrians had been thoroughly alert for weeks. The year, however, was too far gone for serious operations, and the net gain to the French was the securing of a safe bridge-head for the next year, which was to witness the execution of Carnot's celebrated scheme involving the three armies of Jourdan, Moreau, and Napoleon.

In a recent review of C. von B——k's work, "Geist und Stoff im modernen Krieg," we called attention to the light he sheds on the movements of the Austrians under the Archduke Charles, and the account given of Kleber's share in the operations comes in most opportunely to complete the picture, explaining many of the extraordinary lapses on the part of the French of which the Archduke was able to take advantage. Jourdan was no longer equal to his responsibilities and wrote for orders for every kind of eventuality to Carnot in Paris. Kleber did his utmost within his own sphere, and endeavoured to stiffen Jourdan's resolution; but the internal resistances of the machine were too great and the momentum of the Army died out at the critical moment, when it had already swept the Austrians clear of the right bank of the Rhine and had penetrated far into Suabia, to Bamberg and Wurzburg.

The retreat was not justified by the fighting or punishment the French received, but though precipitate it never degenerated into the rout it might have been, for the Archduke was called away to deal with Moreau; the commanders to whom he was compelled to entrust the pursuit had not the requisite energy to make the most of the opportunity. Kleber's conduct of the rear guard merits the closest study not merely for the tactical ability he displayed, but for his extraordinary coolness in difficulties and the astounding influence on the men under him he was able to exert.

The friction between the Directory, Jourdan, and Kleber, now became unbearable, though fortunately the reign of the guillotine was now practically over; and when Hoche, only 17 years of age, was appointed to the command of the Sambre and Meuse Army over his head, the latter sent in his resignation, which was accepted, and he retired to settle down in the suburbs of Paris, determined to have nothing more to do with politics or politicians. It was, however, an idea more easily conceived than executed. The politicians had not forgotten him, and for the third time his name was placed on the proscription list for exportation to Cayenne. Fortunately he learnt what was in store for him in time, placed his house in a state of defence, and swore he should never be taken alive. Being a man of considerably stronger character than the heroes of the Rue Chabrol the other day, and the Government itself not being strong enough to outrage public opinion, the threat had its effect and he was allowed to go about unmolested.

It was shortly after this event that he was approached by General Caffarelli on behalf of Bonaparte and offered a command in the Army of England, destination at the time unknown.

Kleber, whose letters show him as singularly free from professional jealousy of any kind, and who had followed Bonaparte's career in Italy with interest and admiration, willingly accepted the offer; even when the true destination was revealed to him, he raised no objection, and forthwith posted off to Marseilles to superintend at the collection of transports and embarkation of the troops; there was no inkling in men's minds then of the basis of that sea power they were about to affront—we may add in passing that even his present biographer betrays no appreciation of the point involved either.

The details of the ships employed for his Division are interesting. In all 6,724 officers and men were embarked on 14 ships, but nothing is said of either horses or field guns, and no mark distinguishes which were war-ships and which, if any, transports. The voyage itself, including the call at Malta, is briefly touched on. Then comes the landing and capture of Alexandria, in which Kleber was wounded in the head by a spent musket shot. He was left at the base to recover and take command, and for the next few weeks was completely cut off from Bonaparte, whose answers to his numerous reports, if ever written never arrived. Suddenly one evening the sound of heavy firing came over the sands from Aboukir, and soon after dark a tremendous explosion was seen—it was the last of the French flag-ship "L'Orient"—and soon the news of the disaster began to

arrive ; but still it seems that no true conception of its magnitude revealed itself either in Alexandria or later at Cairo, and that the Army was henceforth doomed never appears to have entered their heads.

Space fails to follow Kleber through further developments. He marched with the Army into Syria, fought the battle of Mount Tabor under conditions of the greatest severity, led the assaults on Acre in person, and ultimately commanded the rear guard in circumstances comparable only to the last days of the retreat from Moscow.

The evasion of Napoleon from Egypt was characteristic. He seems to have been afraid to meet and discuss the matter with Kleber, but having arranged a rendezvous with him at Aboukir, posted down to Alexandria where Kleber had resumed the command, and embarked on the plea of a fair wind and no English cruisers, before Kleber could return, leaving behind him instructions for the latter to assume command in his absence.

The chapters relating to his administration of this trust until his assassination are perhaps the most interesting to English readers in the whole volume, particularly to those who have served in Egypt and know the people. We can only regret that in the present state of the book trade there is so little prospect of such a sound and instructive work finding either translator or a publisher. The book is thorough and will bear reading and re-reading : as an illustration of what a great character can accomplish in face of dangers and difficulties, of treachery and suspicion, it is one of the most suggestive and instructive that we have yet encountered. We have our records of heroes, too, but with us wherever our men have fought they could fairly rely on one another. In Kleber's case, until he reached Egypt, treachery at home was a far worse danger than the enemy in front ; and since in the near future it seems probable that both Army and Navy are likely to come under a tyranny of "Representatives of the People" in the shape of the daily press, equally hasty to condemn without hearing, and to denounce on insufficient evidence, we cordially recommend it to all officers as an example of the conduct of a resolute man under similar circumstances.

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*With Seven Generals in the Boer War.* By Major A. W. A. POLLOCK, late Prince Albert's (Somersetshire Light Infantry), (with illustrations, maps and plans).

8vo. Skiffington & Son. Price 6s. 1900.

Major Pollock was one of the *Times* War Correspondents in the late Boer War, but he does not seem to think, according to the scathing denunciations of *Blackwood* in his "musings without method," that war is conducted for his peculiar benefit. He neither imputes wholesale incompetence, nor familiarly takes any favourite generals under his especial protection. This is no attempt, as he modestly says, to give, even in brief, a history of the war in South Africa, or even of that not inconsiderable part of it that he saw, but simply a personal narrative of those incidents that he witnessed. It is this which provides the human element, that makes his account more interesting than those of even more practised writers who attempt higher flights. There is a winning simplicity about the gusto with which he invites the reader to sympathise with him in his enjoyment of a whiskey and soda or a much-needed bath on occasion, as well as in the frank narrative of his efforts to avoid senseless exposure to injury or capture.

But though mainly personal, the book is by no means without value as an instructive account of those phases of the war that the author describes. He is a soldier of experience, who had taken part in the Zulu War of 1879, and who has seen much service, and has evidently studied and thought much about war. His occasional criticisms on the military conduct of the operations are not, therefore, mere hasty generalisations. His descriptions of the "side shows" of Stormberg and Colesberg, which have been little dwelt on by other writers, are well worth study, while his account of Mahon's march to the Relief of Mafeking is the best we have seen.

Major Pollock sailed in the "Dunotter Castle," 13th October, 1899, with Sir Redvers Buller and the Staff of the Army, arriving at Cape Town on the 30th. He proceeded at once up country past Stormberg Junction to Queenstown, the position of which he criticises. He thinks the important strategic position of Stormberg Junction should not have been abandoned, but should have been strengthened and held, even with a small force, until reinforcements came up in sufficient strength to secure the cross line to De Aar Junction. It certainly seemed so at the time, but Sir W. Gatacre's main task was to guard the communications by Queenstown, for which indeed his force was inadequate, and if he had held the advanced position these might have been endangered, and we do not know as yet what Sir William's instructions were.

The author's criticisms on the systematical frontal attacks of the early part of the war, which were published in the *Times* of the 2nd January, 1900, are repeated in the early part of his book, and are those that have recommended themselves to many thoughtful students of modern war. The occupations of successive infantry fire positions even during the artillery bombardment to bring the defenders under effective fire is inculcated, then rapid occupation by the attackers of successive points, without attempting to advance in one general line, and the more intelligent use should be made of ground are again advocated.

The author's account of the Stormberg disaster is very full, and is accompanied by sketches furnished by the Intelligence Department, which, however, necessarily give only a very approximate idea of the ground, as they were got out soon after the occurrence. It is to be hoped that when the official account of the Boer War is published, more pains will be taken to annex intelligible and accurate sketches of the ground than has hitherto been the case with these War Office publications.

The author attributes the disaster to the following causes :—

1. The badness of the maps used.
2. The neglect of the responsible authorities to take compass bearings, which might have been done, as he took one himself.
3. The leaving the companies of the Berkshire Regiment, who had only evacuated the Stormberg works a month previously, and consequently knew the ground, behind at Queenstown, so that those engaged were ignorant of the position.
4. The defective arrangement of march adopted by which, when, owing to the mistake made by the guides in leading the column a long flank march round, they were suddenly fired on from a flank and taken by surprise, no formed body was available as a reserve to interpose, both battalions being at once engaged in a skirmishers' fight.

The author praises highly the gallant behaviour of the troops under the circumstances, the devotion and courage of the officers, and the splendid conduct of the two batteries engaged who covered the retreat.

That General Gatacre's attempted *coup* was not worth some risk, the author does not deny; "had he been successful, the rebel movement in the eastern provinces would have been reduced to positive impotence." But having regard to the high stake he played for, it is evident that no human precaution should have been neglected to prevent the miscarriage of the venture. The officer saw much of the brave Captain de Montmorency, V.C., who had so skilfully trained his scouts, and of whose minor operations with the mounted infantry round Dordrecht he gives many details. He was an ideal soldier, and was an incalculable loss to the Army when he fell in a wayside skirmish on the 24th February. His eye for country was marvellous.

The action at Cyphergat on 3rd January is well described. The Boers suddenly attacked, while the two batteries of artillery were several miles away *at a field-day*. When they arrived in the afternoon, only one was apparently utilised, and that badly placed. A splendid opportunity was offered for the action of their shrapnel as 2,000 Boers streamed over the hills within 3,000 yards, but they were not in position to do so. The author constantly praises the conduct of

Brabant's Horse, and brings to notice the officers of the Police and Mounted Kaffrarian Rifles, who skilfully defended their post by evacuating their entrenchments by day and occupying pits or natural cover around, letting the Boers pound their camp hour after hour without effect, and quietly re-occupying their trenches at night. He further comments on the uselessness of allowing mounted troops to become "bottled up" in a beleaguered place as a pure waste of material better suited to more active employment. He condemns the occupation of places we could not hold, and their withdrawing from them, thereby greatly compromising the inhabitants, who are often accused of breaking faith and fighting against us when they only did so on compulsion, as we did not remain to protect them. Gatacre's failure added several hundreds to the commandoes.

Major Pollock was sent to Rensburg from Sterkstrom in February to report on General French's operations. He mentions the unfortunate disaster to the gallant Suffolks in their ill-fated attempt to seize a hill, which would after all have been but a white elephant. He much praises the conduct of the retreat from Rensburg to Arundel by General Clements. He visited the Remount Depôt on the Orange River. He is evidently very fond of horses and is apparently a good judge of horse flesh. He saw, shortly after his arrival in South Africa, how well the teams of omnibus horses from the London General, Road Car, etc., worked, owing to their being in good working condition. He has many remarks to make in regard to the management of horses on the veldt, which he well knows after his years of service in South Africa. "It is because we are bad horse-masters that the Boers have proved better able to keep the field than ourselves. When a convoy is about to start, our cavalry patrols wait till the last moment, then *gallop* to their places, with the best imitation of 'Long Valley' smartness that their jaded animals are capable of, instead of being sent ahead at a walk to gain their distances and intervals in good time. Then throughout the march the men sit wearily on their horses where Colonials and Boers would have led them." It will be remembered that Lord Roberts issued a special general order on this subject, and there is no doubt many valuable horses were lost by faulty treatment. The author's personal adventures in search of horses are very entertaining.

He afterwards moved on through Jacobsdal to Paardeberg, where he was attached as assistant correspondent to Lord Roberts's main army, and witnessed the surrender of Conje on 27th February, which has been so often described by others. He is full of praise for the extraordinary courage and tenacity of the Boers, but gives great *kudos* also for their skill and coolness under fire to our own engineers. He accompanied the army in its move forward through Poplar Grove towards Bloemfontein. His description of the action of Poplar Grove on 7th March is very full and clear. He was with the 9th Division on the northern bank, and he describes the masterly handling of his brigade by Major-General Smith-Dorien, and the gallant way in which two companies of the Shropshires scaled a hill and captured a gun, but owing to the absence of cavalry and mounted infantry most of the Boers escaped. He blames the Cavalry Division, which, he says, marching off too late, wasted time in skirmishing with the Boer outposts to the south, which caused General French to fail to reach his destination east of Poplar Grove, as planned by Lord Roberts, which might have brought about the capture of Presidents Krüger and Steyn.

On 10th March the author was at the action at Driefontein, which he describes in detail. Here, again, the enemy suddenly opened fire from well-concealed positions before the troops were sufficiently opened out for attack, and suffered more than need be. He entered Bloemfontein with the victorious army, and witnessed the hoisting of the Union Jack at the Presidency, and the march of the 6th Division through the town.

On 16th March Major Pollock was wired for to Kimberley to join the Mafeking Relief Column then forming, but as it was not ready yet, he joined Lord Methuen's expedition to Boshof. He is very severe on the vacillation of the authorities in

regard to this and other matters, by which Lord Methuen's movements were hampered. "To thrust troops impulsively forward and then clutch them convulsively back, is not a good method of making war." He was present at Lord Methuen's surrounding of the Boers near Boshof, when Colonel de Villebois-Mareuil was killed, and during the retreat from Schwartzkopje to Boshof again, which he says was splendidly managed by Lord Methuen, and he gives the greatest praise to Lord Chesham and the Imperial Yeomanry, whose services were invaluable here as elsewhere.

He then joined the Relief Column under Colonel Mahon, a born leader of men, and his account of the marching and fighting of this picked force is most graphic. He details the meeting with Plumer's admirably commanded force and gives especial praise to the colonial troops, to Lieut.-Colonel Edwards, and the Imperial Light Horse, and to the handling of the rear guard at the Molopo River by Lieut.-Colonel Peakman; not that others are omitted, but we have already exceeded the limits in our review of this excellent book, which is not only full of information, but of humour. The story of the omnibus horse is too good not to be repeated. A driver mounted an ex-tramcar animal to lead a sick horse. His mount kicked and reared, and obstinately refused to move on. The driver drove in the spurs and objurgated loudly, but in vain. "Stow them spurs, Jack," cried his mate, "and ring your blooming bell." Whether this had the desired effect is not related.

There are one or two slight errors, such as March for April on p. 203, and we venture to think the narrative would be clearer if the marginal dates with which it commences had been continued throughout. The ground covered is very extensive, so, though the book is well illustrated, a general map showing the different lines of operations and the chief points mentioned on a scale of about 75 miles to the inch would much enhance its value. As it is, it is a most interesting and useful contribution to the history of the war.

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